

The BUILDER's POCKET-TREASURE;

O R,

PALLADIO delineated and explained,

In such a Manner as to render that most excellent
AUTHOR plain and intelligible to the meanest Capacity,
in which not only the Theory, but the Practical Part
of Architecture has been carefully attended to.

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Pieces, &c. their Bases, Capitals, and Entablatures, at
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Mouldings for the Inside of Rooms, &c. the Construction
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The Whole neatly and correctly engraved on Forty-four
COPPER PLATES.

With printed Explanations to face each Plate.

By WILLIAM PAIN.

Engraved by ISAAC TAYLOR.

A NEW EDITION, with an APPENDIX
of Eleven Copper Plates, and Explanations.

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THE
P R E F A C E.

*A*S Architecture is of universal Benefit to a Community, every Attempt to illustrate and explain so useful a Science, may claim some Share of Merit. The Author of the following Sheets is convinced that this Subject has been already handled by Men of Learning and Abilities far superior to his, yet cannot help observing, at the same Time, that unless the Reader is possessed of a Capacity almost equal to that of the Writer, he will be little benefited by the greatest Part of Treatises in this kind.

In the Course of the following Sheets Plainness and Perspicuity have been principally considered. Elegance of Style would be of no Advantage to the Subject; but, on the contrary, would be repugnant to the End and Design of the present Publication, which is to obviate and remove the many Difficulties
which

which common Mechanics usually meet with in perusing Books of Architecture; who, after having been at great Pains to improve themselves in their Profession, meet with so many Discouragements that oftentimes they are obliged to desist from their Undertaking.

And as PALLADIO is allowed, on all Hands, to be the greatest Master that ever published any Thing on this Subject, the principal View herein is to render his excellent Performance of universal Service to Builders of every Denomination, by annexing such Explanations as will enable a Workman to put his Designs in Practice.

The Author flatters himself that the Rules here laid down will not appear in the least difficult, even to the meanest Capacity, and can safely affirm that he has advanced nothing but what may be easily applied in Practice, having, in the Course of more than twenty Years Experience, executed almost every Part of this Book himself, which is of so convenient a Size that it may be carried about by a Workman wherever his Business calls him; by which he will have his whole Trade in his Pocket, and not to be at a Loss for any Thing which may occur in the ordinary Course of his Profession.



[To face PLATE I.]

*Of the Construction of Mouldings, Banisters, and
Polygon Heads for Posts, &c.*

To draw the Curve Line of the Cima-recta, divide the half Radius into six Parts, and with five of those Parts make Points of Intersection *a b*, which will be the Centers of the Curves.

Divide the Radius of the Cima-reversa into six Parts, the Points of Intersection made with three of those Parts, will give the Center of each Curve.

Its Projection must be equal to the Height, which is to be divided into six Parts, and one given to each of the Squares, and four to the Moulding.

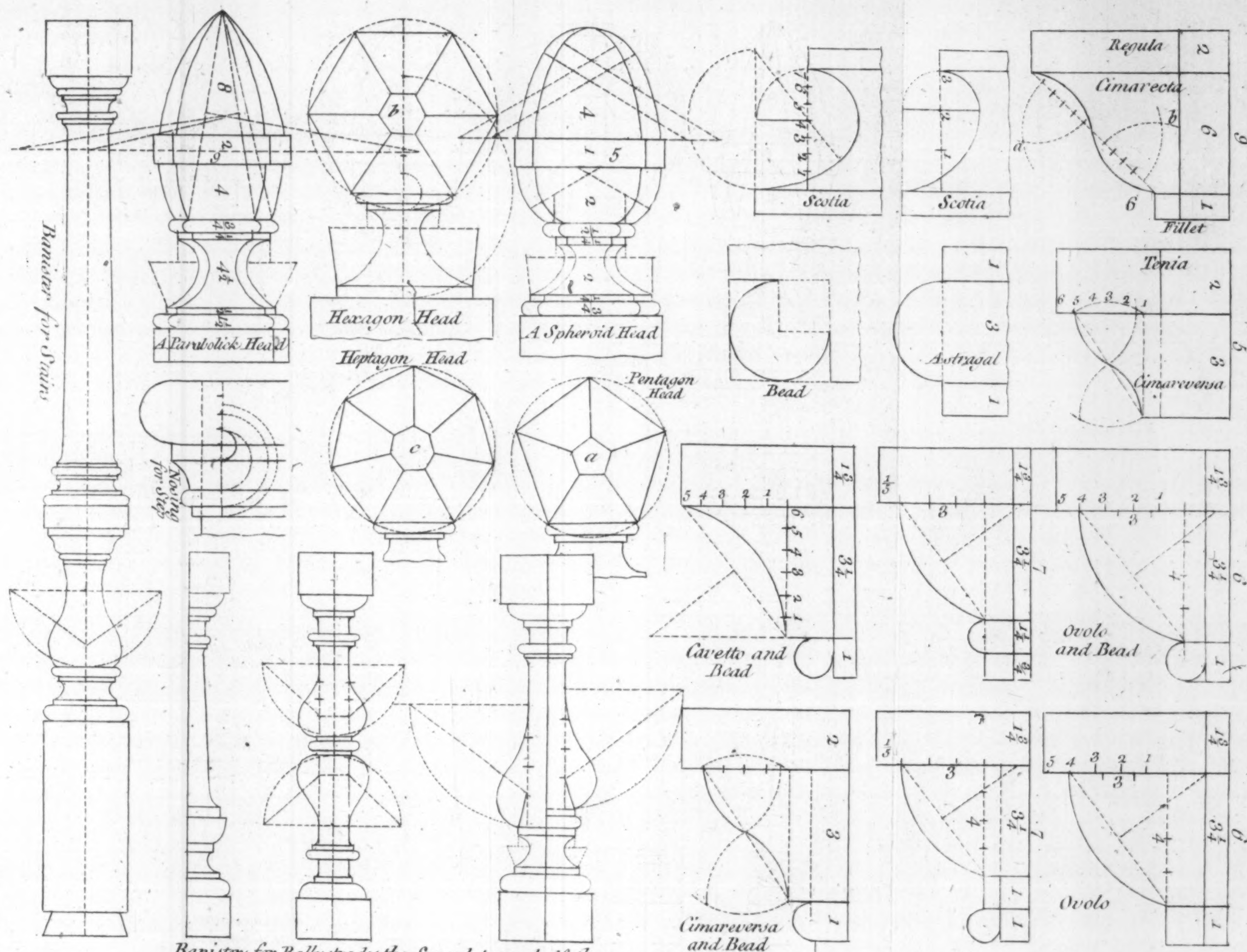
The Projection of the Ovolo is three Fourths of its Height, and the Square is a Fifth of its Projection.

The Width of the Spheroid Head is divided into five Parts, and these Parts are disposed to the Measures in Height.

The Parabolic Head is divided into nine Parts, which are disposed to the Measures in Height.

The small Figures *a b c* on the Sides of the Pentagon, Hexagon and Heptagon Heads are each a fourth Part of the Heads Diameters, and the Height of the Neck three Fourths of the Diameter.





Banisters for Ballustrades the Space between half the width of the Banister or the whole width of the Banister.

[To follow PLATE I.]

3

Of the Proportion, Diminution, and Intercolumniation of the Tuscan Order.

The Column, including its Base and Capital, is seven Diameters in Height.

The Height of the Base, half a Diameter.

———— the Capital, half a Diameter.

———— the Entablature, one Diameter 45 Minutes, which is equal to a Fourth Part of the Column including Base and Capital.

The Height of the Sub-plinth, one Diameter.

The Diminution of the Shaft, 15 Minutes.

The Height of the Tuscan Column, including Base and Capital, may be seven Diameters and a half if required.

The Intercolumniation of this Order is sometimes very large.

In Frontispieces it is usually six Diameters between the Central Lines of the Columns; but in Porticos, Colonades, &c. four or five Diameters between the Central Lines.

In Arcades with Columns in Pairs one Diameter forty-five Minutes between the Central Lines of each Pair.

Of the Proportion, Diminution, and Intercolumniation of the Doric Order.

The Column, including its Base and Capital, is eight Diameters in Height.

The Height of the Base, half a Diameter.

———— the Capital, half a Diameter.

———— the Entablature, two Diameters.

———— the Sub-plinth, one Diameter.

The Diminution of the Shaft, eight Minutes.

The Intercolumniation in this Order is,

In Frontispieces six Diameters fifteen Minutes between the Central Lines;

In Colonades, &c. and Arcades with Columns in Pairs, two Diameters thirty Minutes between the Central Lines of each Pair;

In Porticos, three Diameters forty-five Minutes, and five Diameters.

Due Regard must be had to the Number of Triglyphs which are placed in the Frize.

The Breadth of each Triglyph is thirty Minutes, and the Space between forty-five Minutes.

To proportion the Tuscan Order to Frontispieces, or any Place required on a Sub-plinth, or its own Plinth. Plate 2, Figure A.

Divide the Height *a b* into thirteen Parts, and each Part will be equal to 3-fourths of the Column's Diameter; consequently one Part and 1-third will be equal to the Column's Diameter.

Then divide the Diameter of the Column into twelve Parts, and one of those Parts into five smaller Parts, which will reduce your Diameter to a Scale of Minutes to work by, and these Minutes are to be disposed to the Mouldings in Height and Projection as they are figured on the Plate. The same Method is to be observed in making a Scale of Minutes for the Doric, Ionic, and Corinthian Orders.

To proportion the Tuscan Order on its own Plinth divide *c d* into thirty-five Parts, each Part is equal to a Fourth of the Column's Diameter.

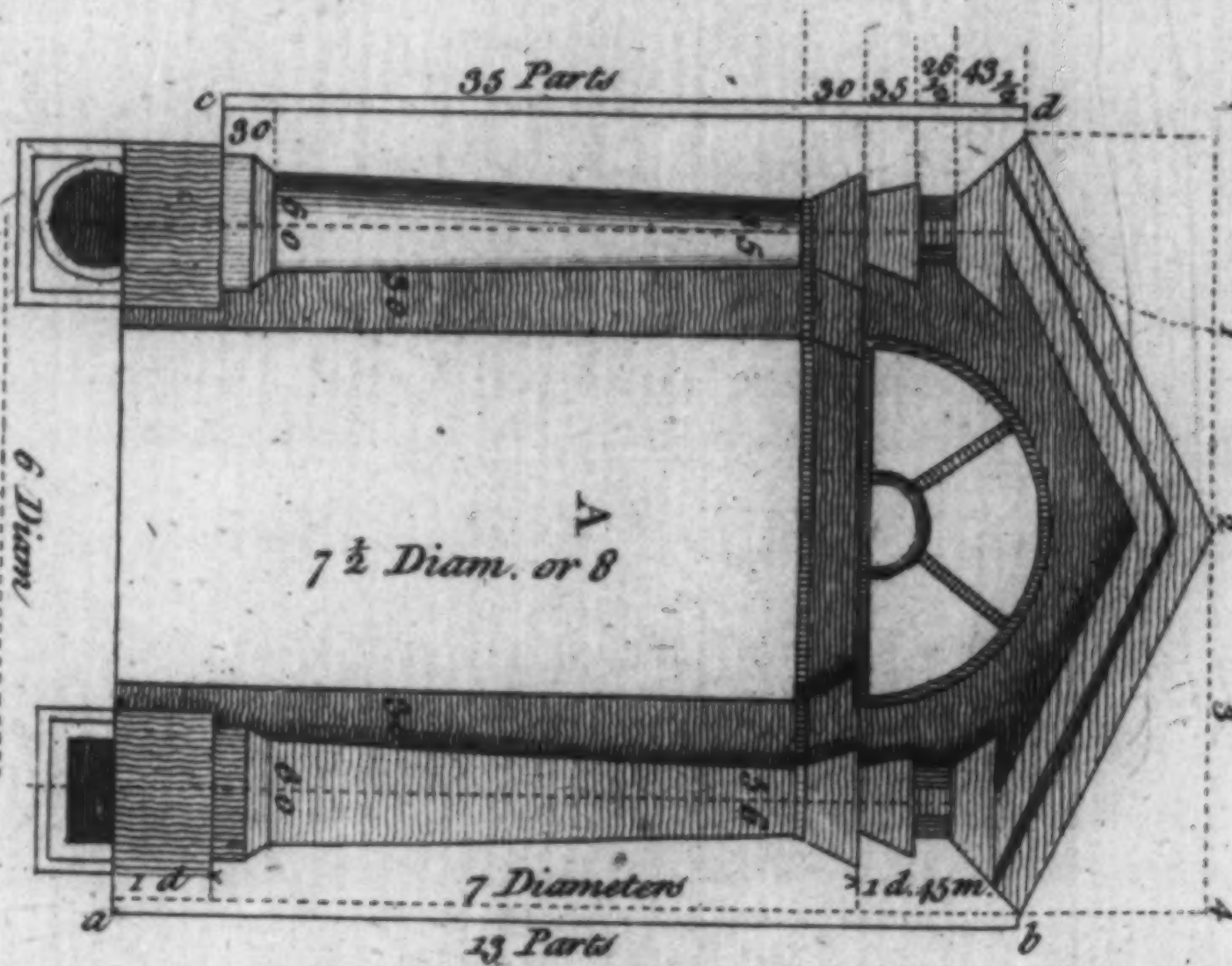
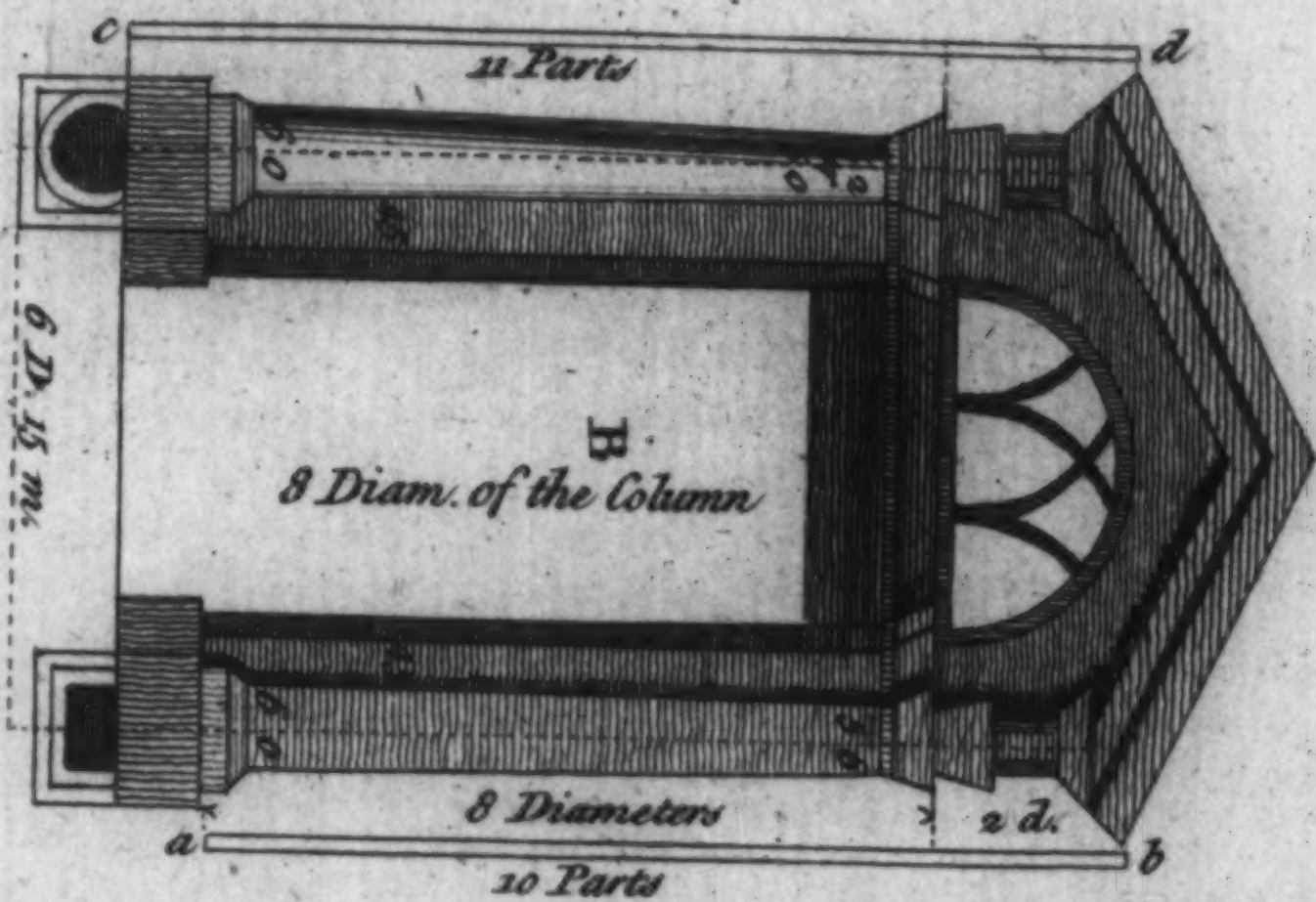
The Base, Capital, and Entablature, with Part of the Pediment, will be found at large in Plate 4.

To proportion the Doric Order. Plate 2, Figure B.

Divide the Height *c d* into eleven Parts, each of which is equal to the Column's Diameter.

On its own Plinth, divide *a b* into ten Parts, each of which will be equal to the Column's Diameter.

The Base, Capital, and Entablature, with Part of the Pediment, will be found at large in Plate 5.





The Proportion, Diminution, and Intercolumniation of the Ionic Order.

Make the Height of the Column, including Base and Capital, nine Diameters.

The Height of the Base, half a Diameter.

_____ the Capital, half a Diameter.

_____ the Entablature, one Diameter 48 Minutes.

_____ the Sub-plinth, one Diameter.

Let the Diminution of the Shaft be eight Minutes.

The Intercolumniation between the Central Lines of the Columns in Frontispieces is sixty Diameters thirty Minutes.

In Porticos, Arcades, Colonades, &c. four and six Diameters.

In this Order Regard must be had to the Numbers of Modillions between the Central Lines of the Columns.

The Breadth of the Modillion must be ten Minutes.

The Interval, or Space between them, twenty Minutes.

If a Dentile Cornice is used to this Entablature, make the Breadth of the Dentile five Minutes, and the Space between the Dentiles two Minutes and an half.

The Proportion, Diminution, and Intercolumniation of the Corinthian Order.

Make the Height of the Column, including Base and Capital, nine Diameters and an half.

The Height of the Base, half a Diameter.

_____ the Capital, one Diameter ten Minutes.

_____ the Entablature, two Diameters.

_____ the Sub-plinth, one Diameter.

The Diminution of the Shaft may be either eight or ten Minutes.

The Intercolumniation in Frontispieces should be seven Diameters between the Central Lines.

In Porticos, three Diameters thirty Minutes, and four Diameters forty Minutes.

The Number of Modillions between the Central Lines in this Order must be observed, and make the Breadth of the Modillions in Front eleven Minutes and a half, the Interval, or Space between them, twenty-three Minutes and an half.

The Space between the Dentiles in the Bed-mould of the Cornice is half the Breadth of the Dentile.

*To proportion the Ionic Order to Frontispieces, &c.
Plate 3, Figure C.*

On a Sub-plinth, divide the Height $a b$ into fifty-nine Parts, and five of these Parts will be equal to the Column's Diameter, which is to be divided into Minutes (as before) for a Scale to work by, and disposed to the Mouldings in Height and Projection as figured on the Plate.

On its own Plinth, divide $c d$ into fifty-four Parts, five of which will be equal to the Column's Diameter.

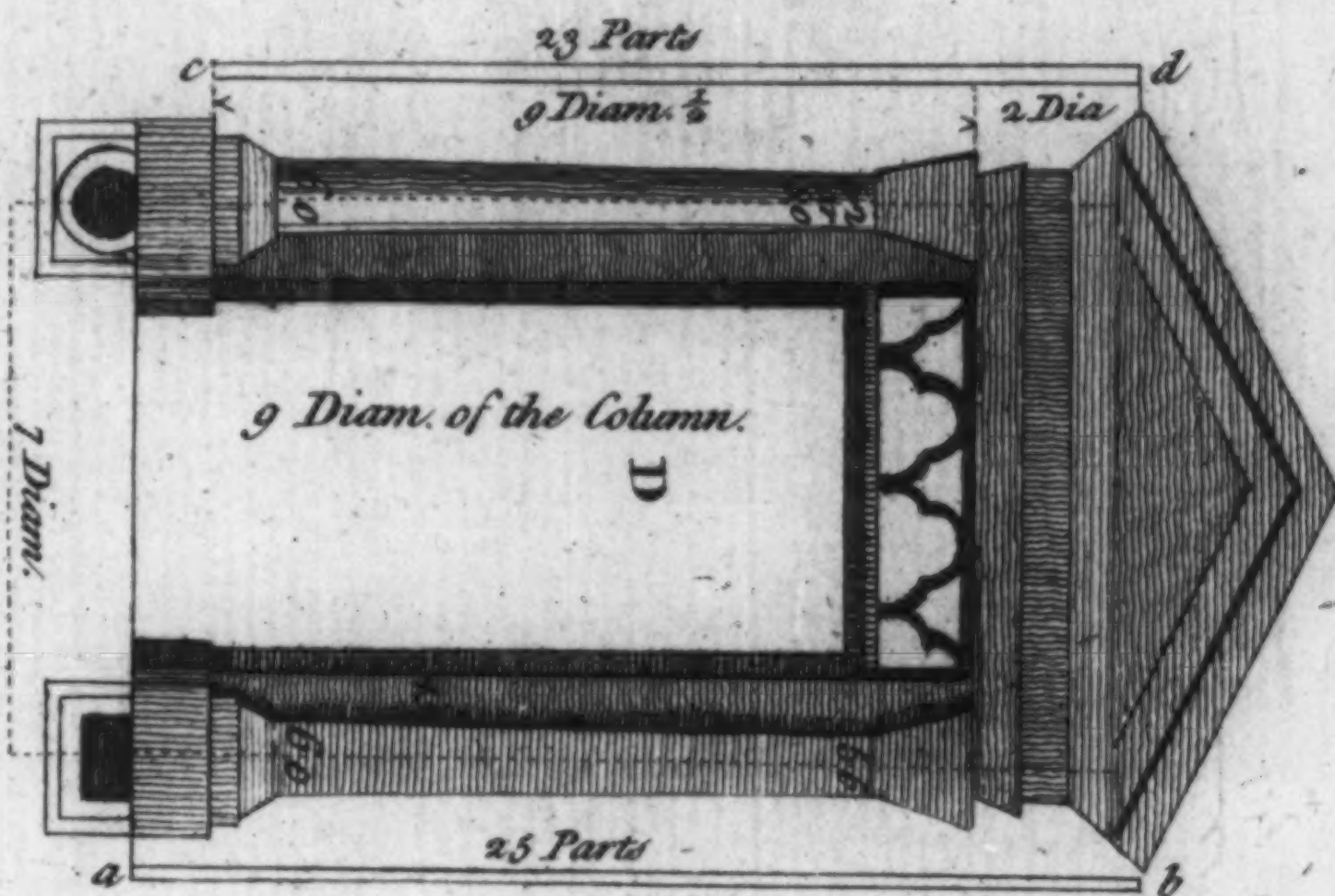
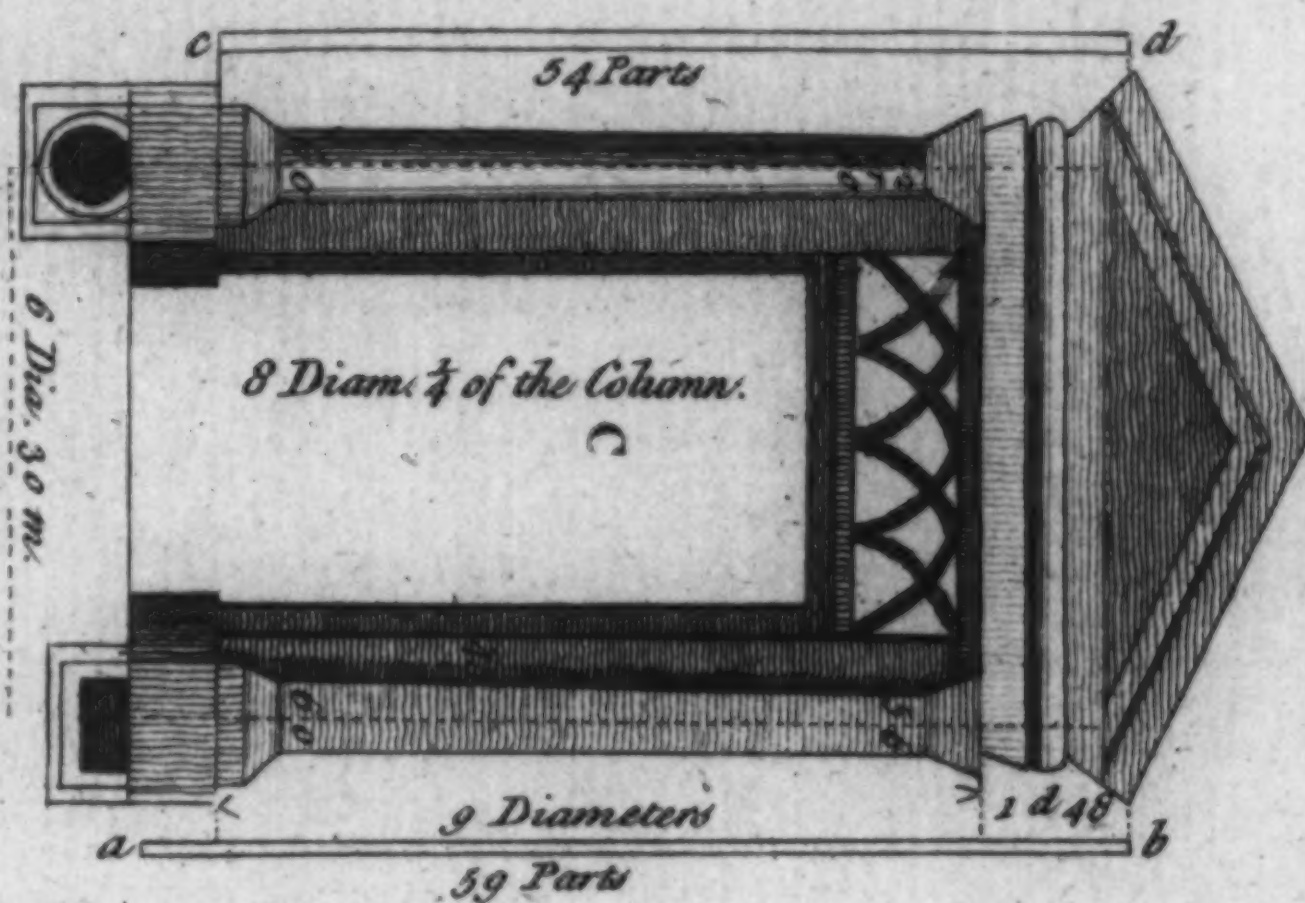
For the Base, Capital, and Entablature, with Part of the Pediment at large, vide Plate 6.

To proportion the Corinthian Order to Frontispieces, &c. Plate 3, Figure D.

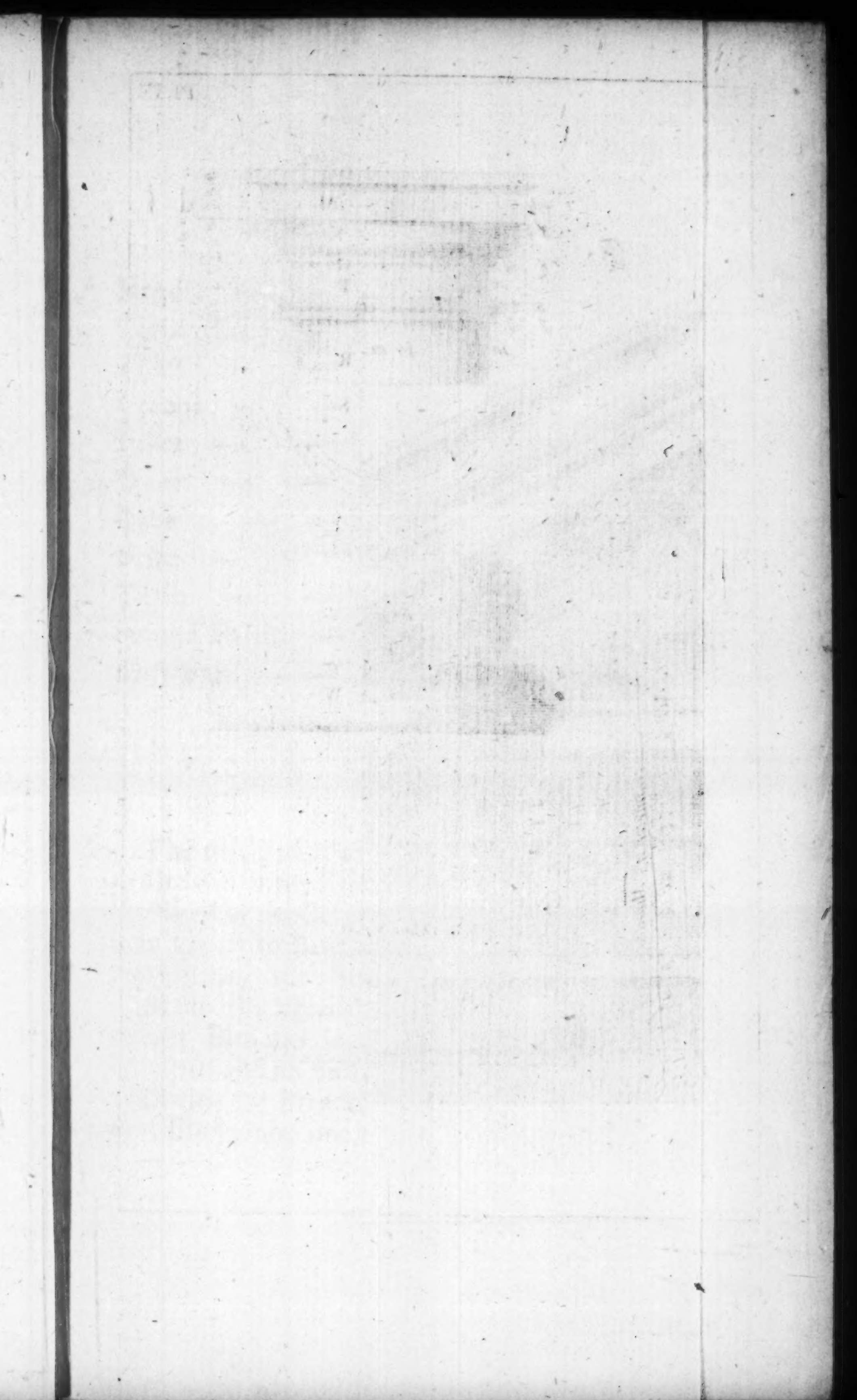
On a Sub-plinth divide the Height $a b$ into twenty-five Parts, and each Part will be equal to half the Column's Diameter.

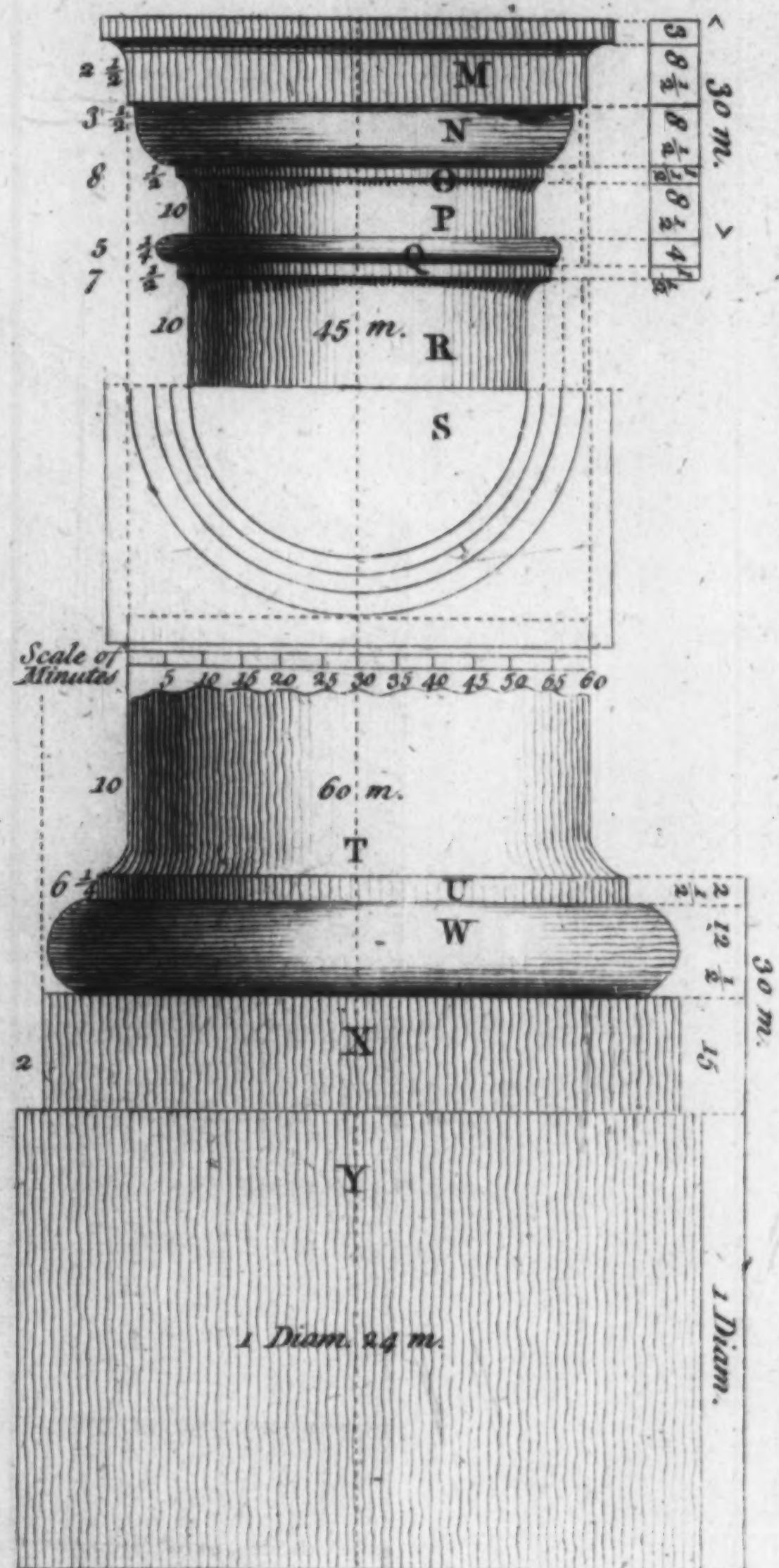
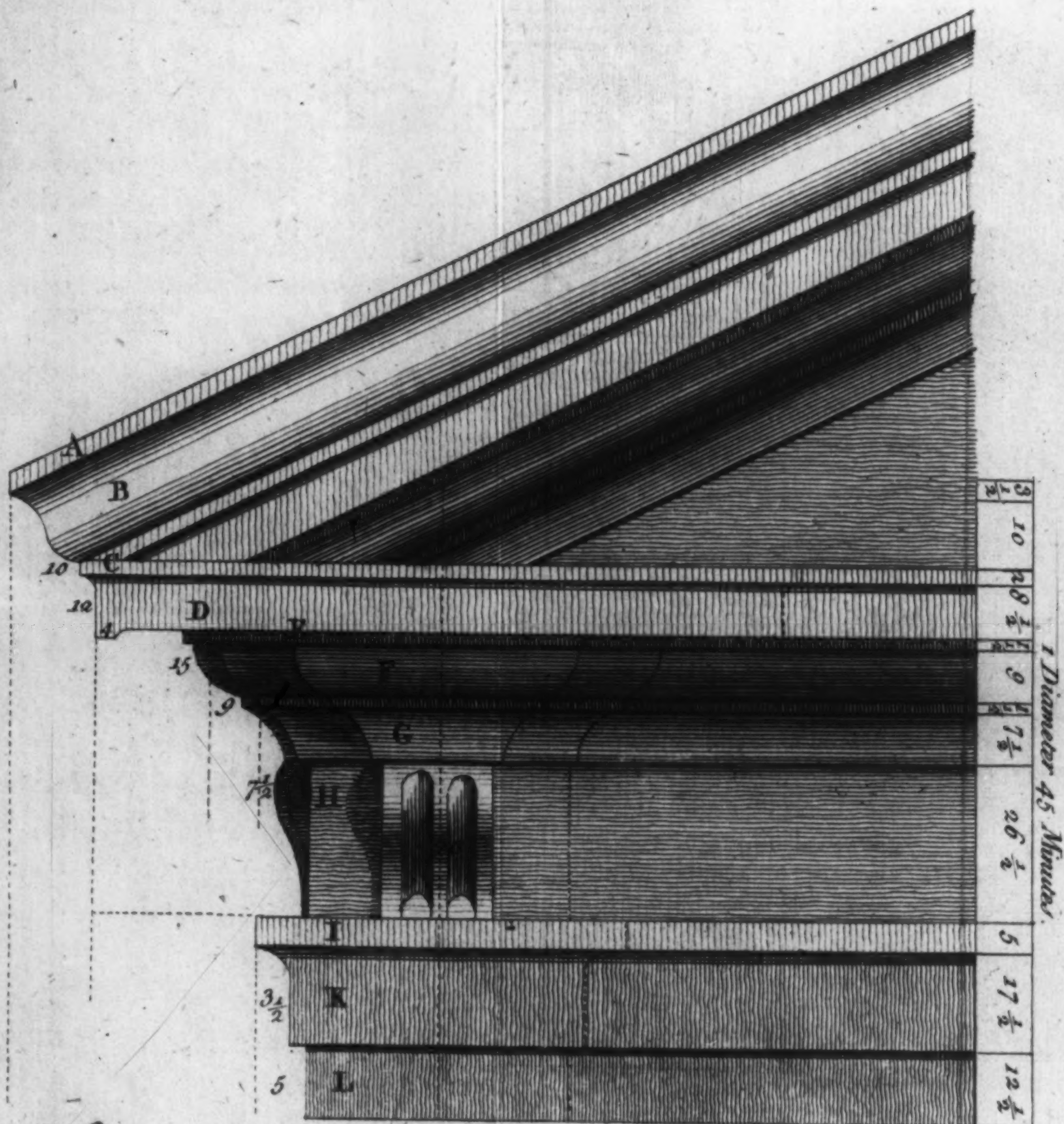
On its own Plinth divide the Height $c d$ into twenty three Parts, and each Part will be equal to half the Diameter of the Column.

The Base, Capital, and Entablature, with Part of the Pediment at large, in Plate 7.









Members in the Tuscan Order.

Regula — — A	Abacus — — M
Cima-recta — B	Ovolo — — N
Fillet — — C	Fillet — — O
Corona — — D	Neck of Capital P
Fillet — — E	Astragal and Fillet Q
Ovolo — — F	Neck of Column
Cavetto — — G	at Top — R
Frize — — H	Plan of Capital — S
Tenia — — I	Shaft of Column
Second Fascia — K	at Bottom — T
First Fascia — L	Cincture — U
	Torus — — W
	Plinth — — X
	Sub-Plinth — Y

The first Fascia of the Architrave and the Face, or Ground of the Frize, must be perpendicular with the Neck of the Column at Top, that the Members may appear to have a true Bearing on each other, representing both Strength and Beauty.

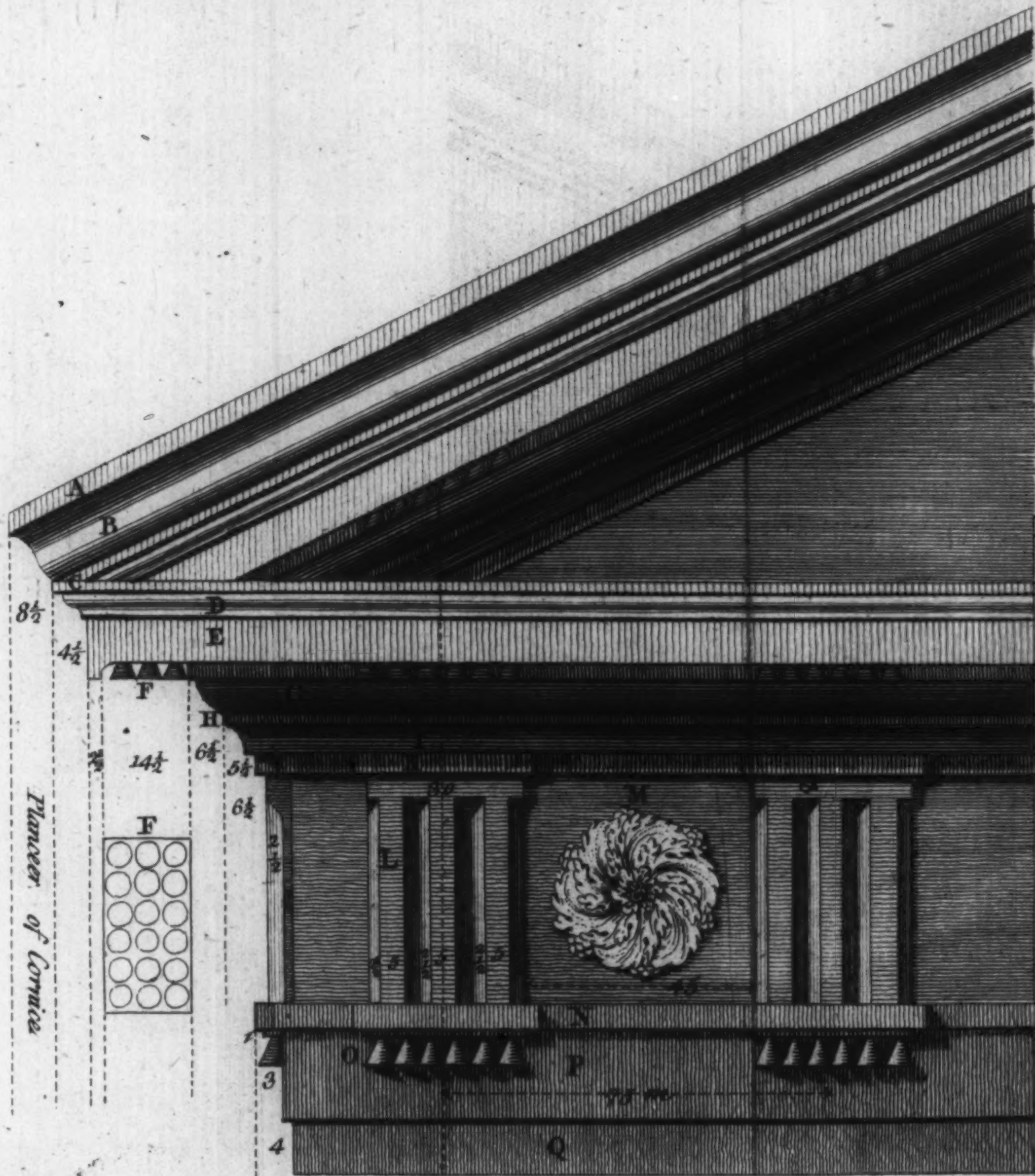
Make the Breadth of the Trufs in the Frize twenty Minutes in Front, and its Profile seven Minutes and an half.

Divide the Breadth into five Parts, and give one to a Flute, and one to a Fillet.

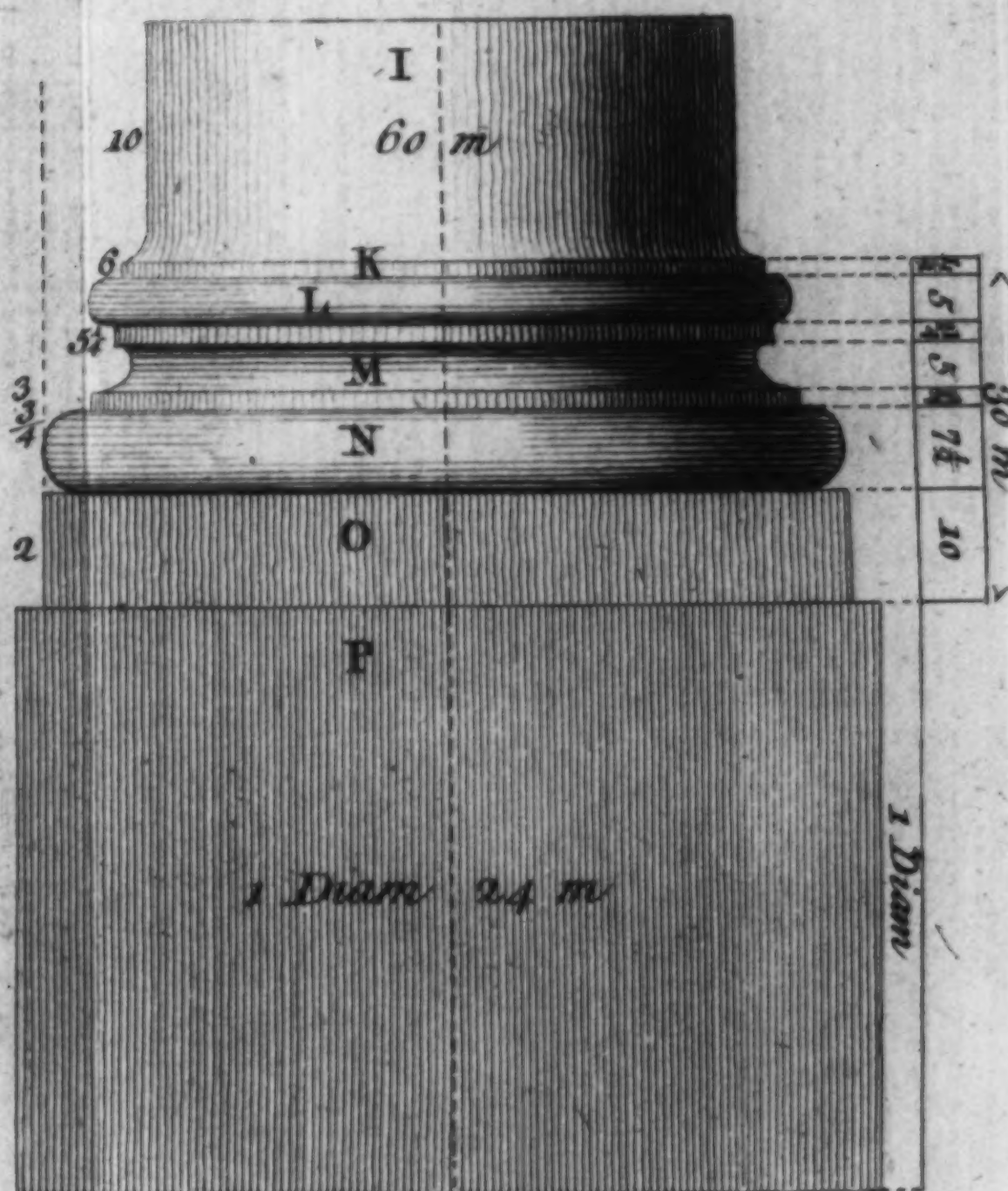
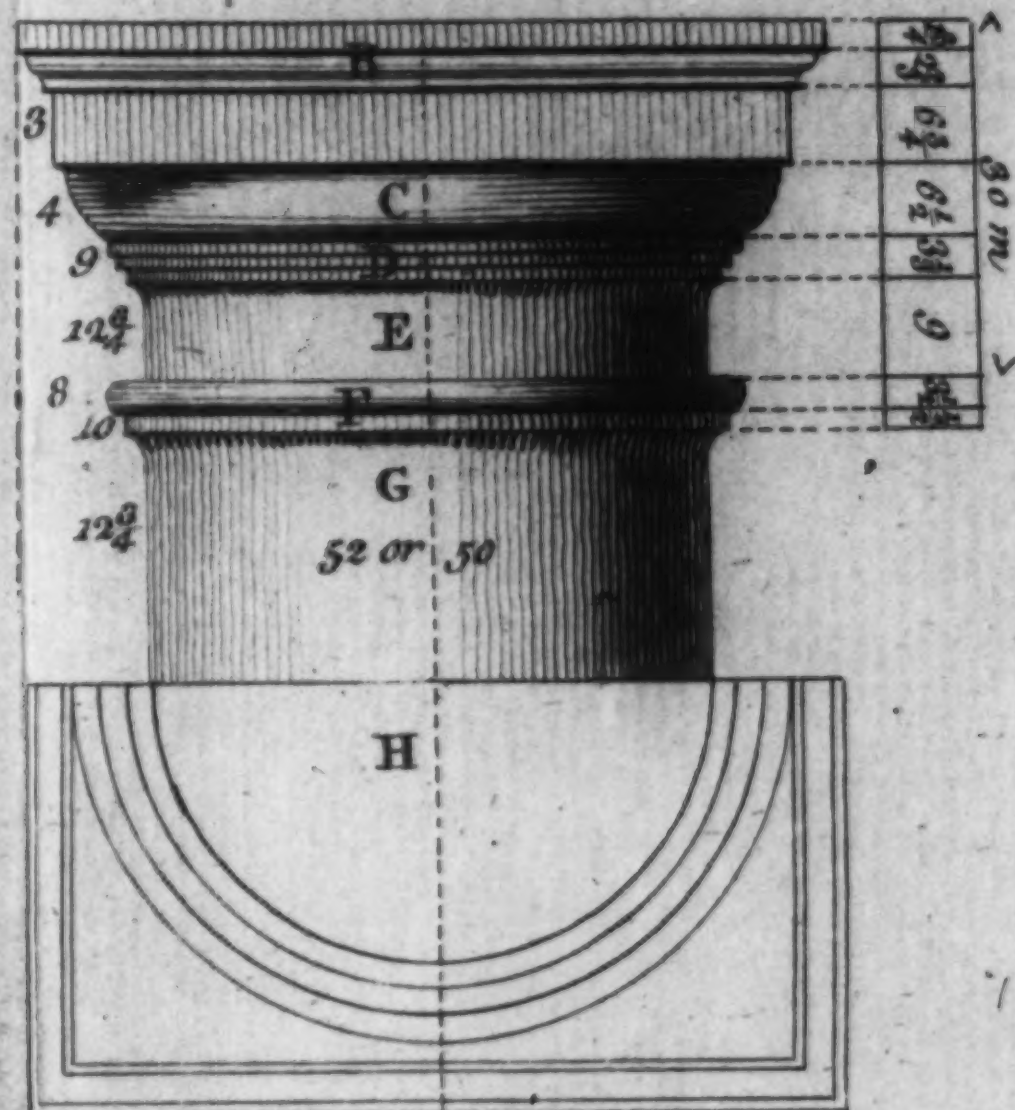
Members in the Doric Order.

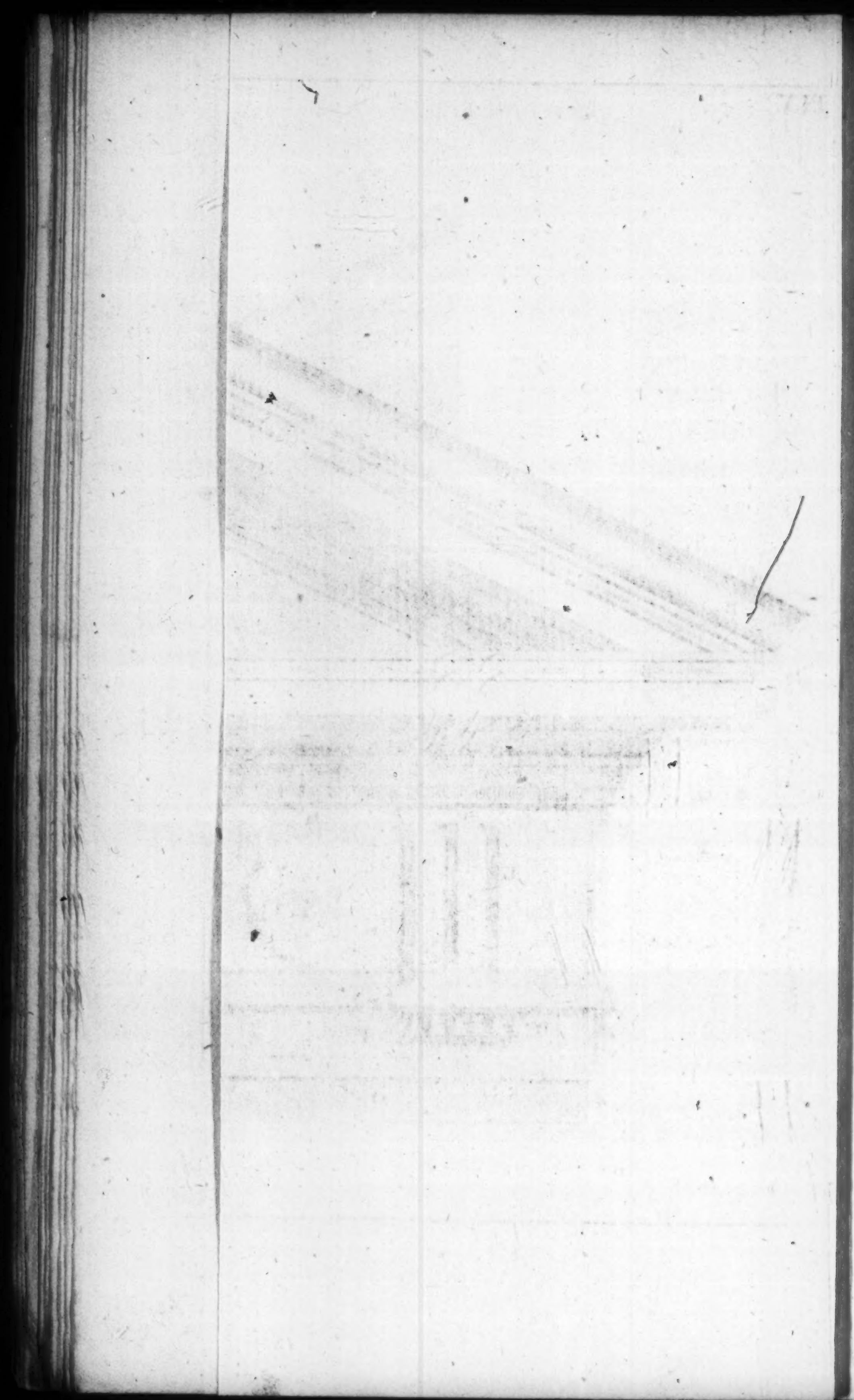
Regula — — A	Abacus — — B
Cima-recta — B	Ovolo — — C
Fillet — — C	Annulet — — D
Cima-reversa — D	Neck of Capital E
Corona — — E	Astragal and Fillet F
Bells or Drops of	Neck of Column G
the Planceer — F	Semi-plan of Cap H
Ovolo — — G	Shaft of Column
Fillet — — H	at Bottom — I
Cavetto — — I	Cincture — K
Cap of Triglyph K	Upper Torus — L
Triglyph — — L	Scotia — — M
Metope, or Space	Lower Torus — N
between the Tri-	Plinth — — O
glyphs in the Frize M	Sub-plinth — P
Tenia — — N	
Bells or Drops in	
the second Face of	
the Architrave O	
Second Fascia — P	
First Fascia — Q	

The first Face of the Architrave and Face of the Frize must stand perpendicular to the Neck of the Column at Top.



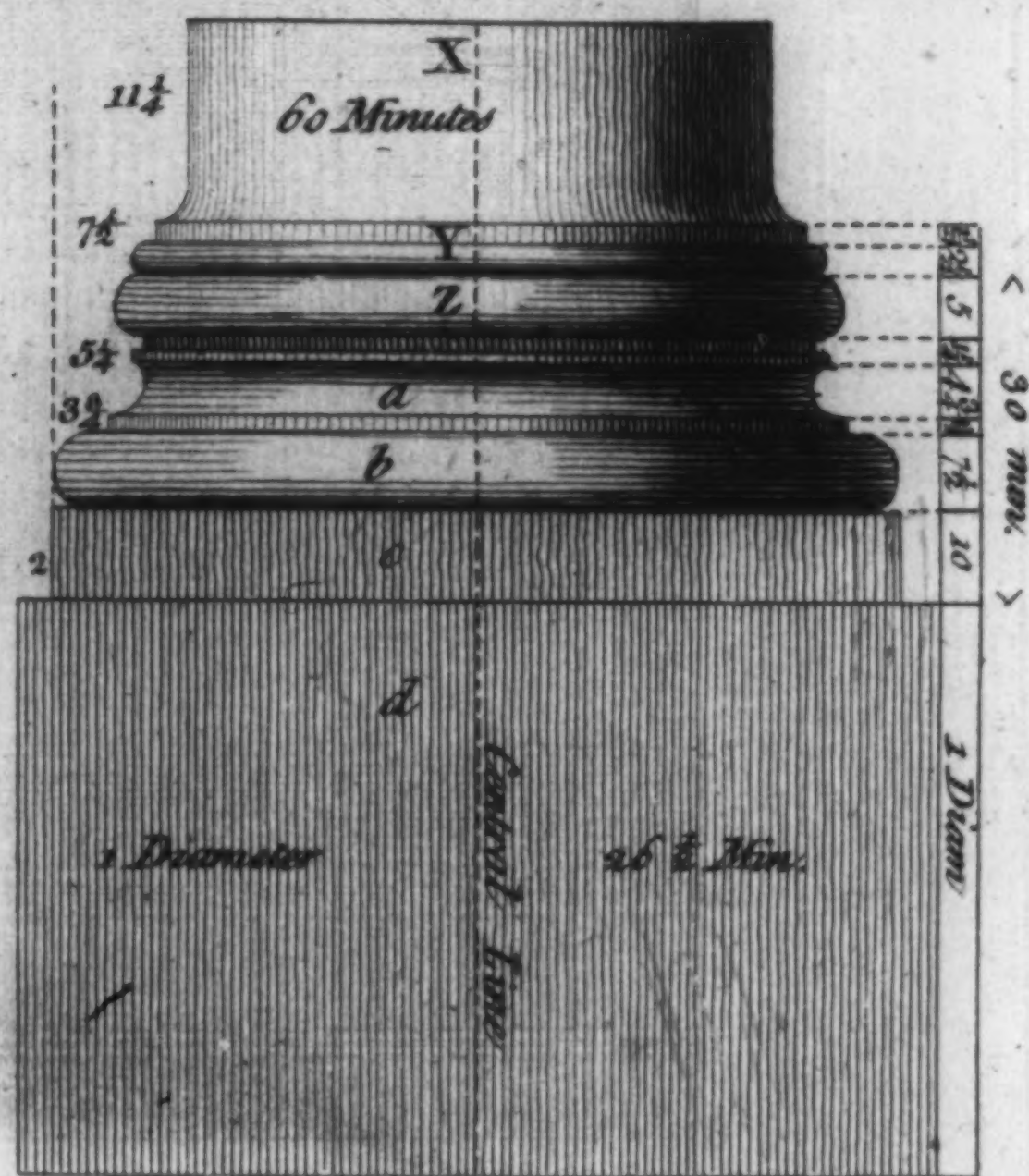
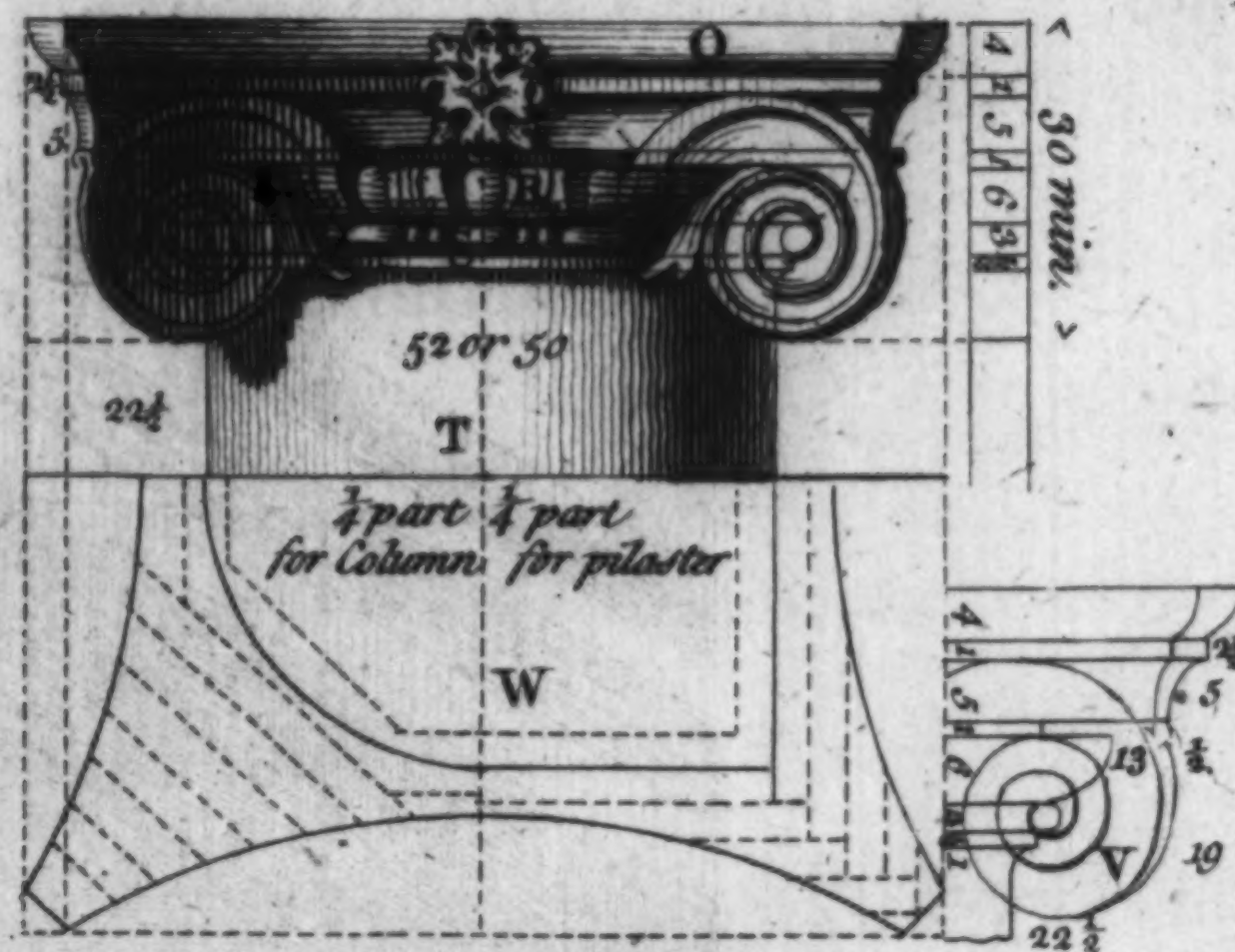
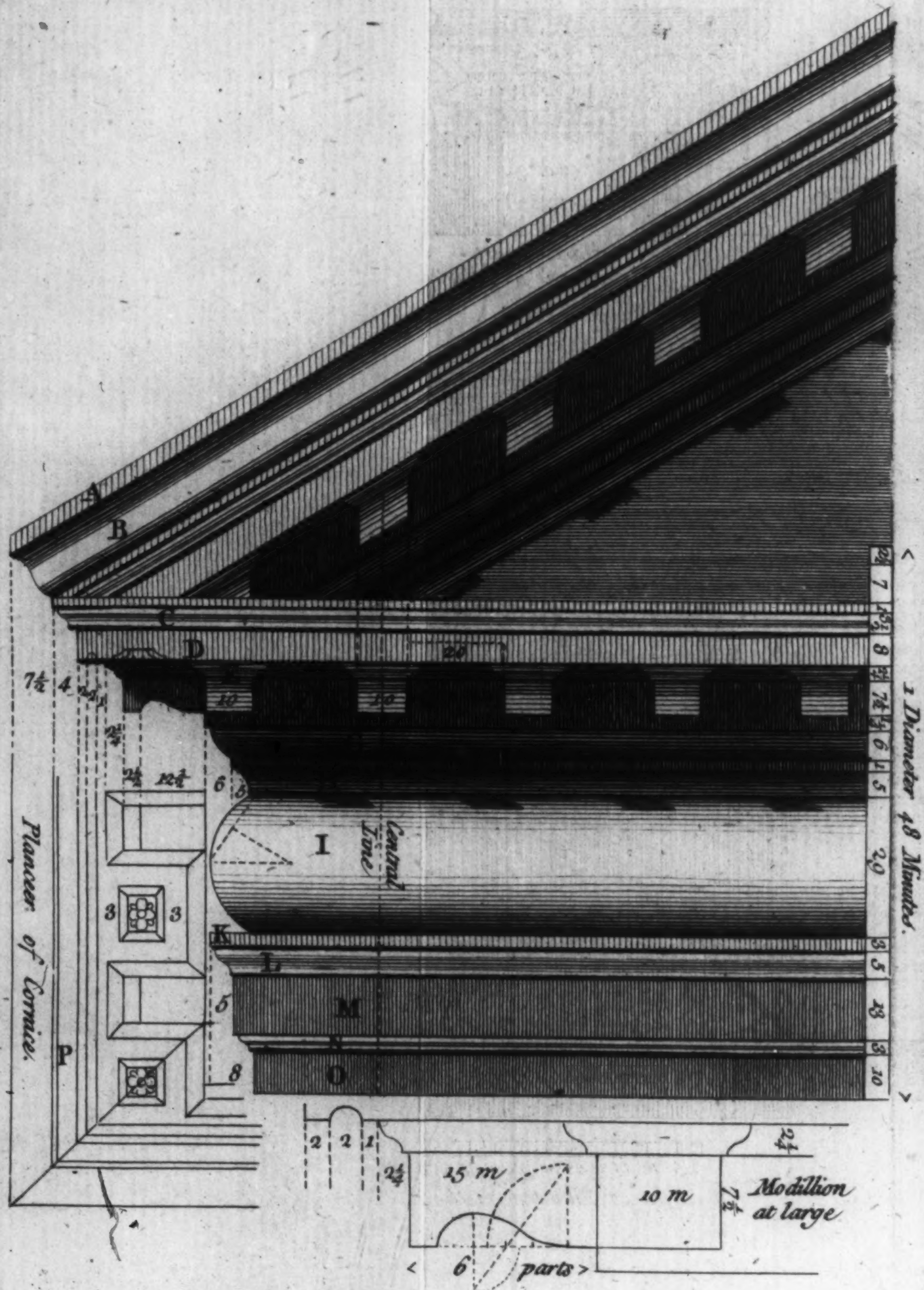
Planer of Cornice







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A Scale of Minutes on the Diam.

Members in the Ionic Order.

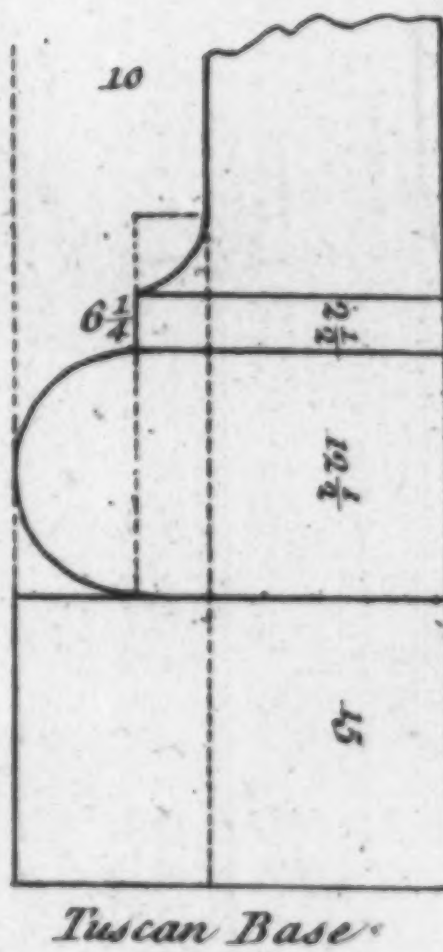
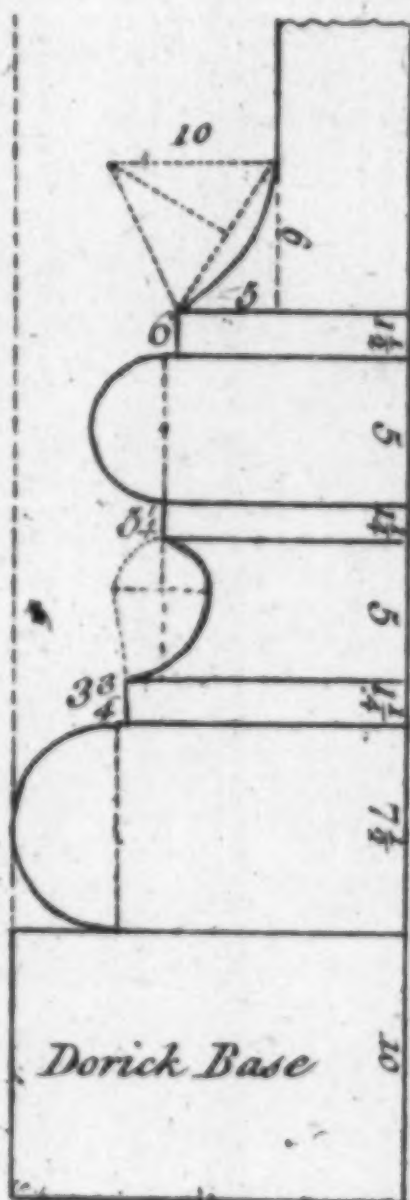
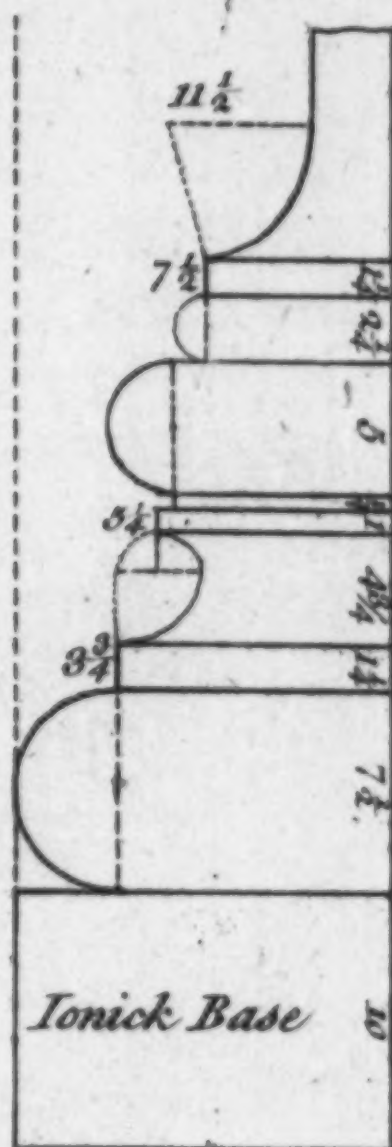
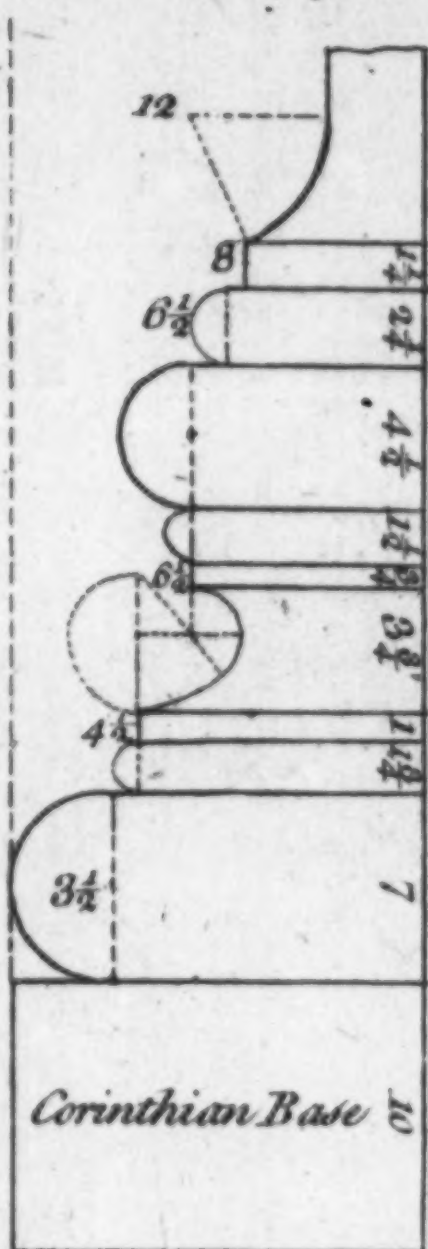
Regula — — A	Abacus — — Q
Cima-recta — B	Ovolo — — R
Cima-reversa — C	Bead and Fillet — S
Corona — D	Shaft of the Co-
Cap of Modillion E	lumn at Top T
Block Fillet — F	Volute — — U
Ovolo — — G	Plan of the Capital W
Cavetto — — H	Shaft of the Co-
Swelling Frize — I	lumn at Bottom X
Tenia — — K	Cincture and Bead Y
Cima-reversa — L	Upper Torus — Z
Second Fascia — M	Scotia — — a
Cima reversa — N	Fillet and Lower
First Fascia — O	Torus — — b
Planceer or under	Plinth — — c
View of the Cor-	Sub-plinth — — d
nice — — P	

The Upright of the first Fascia of the Architrave and Ground of the Frize must stand perpendicular with the Neck of the Column.

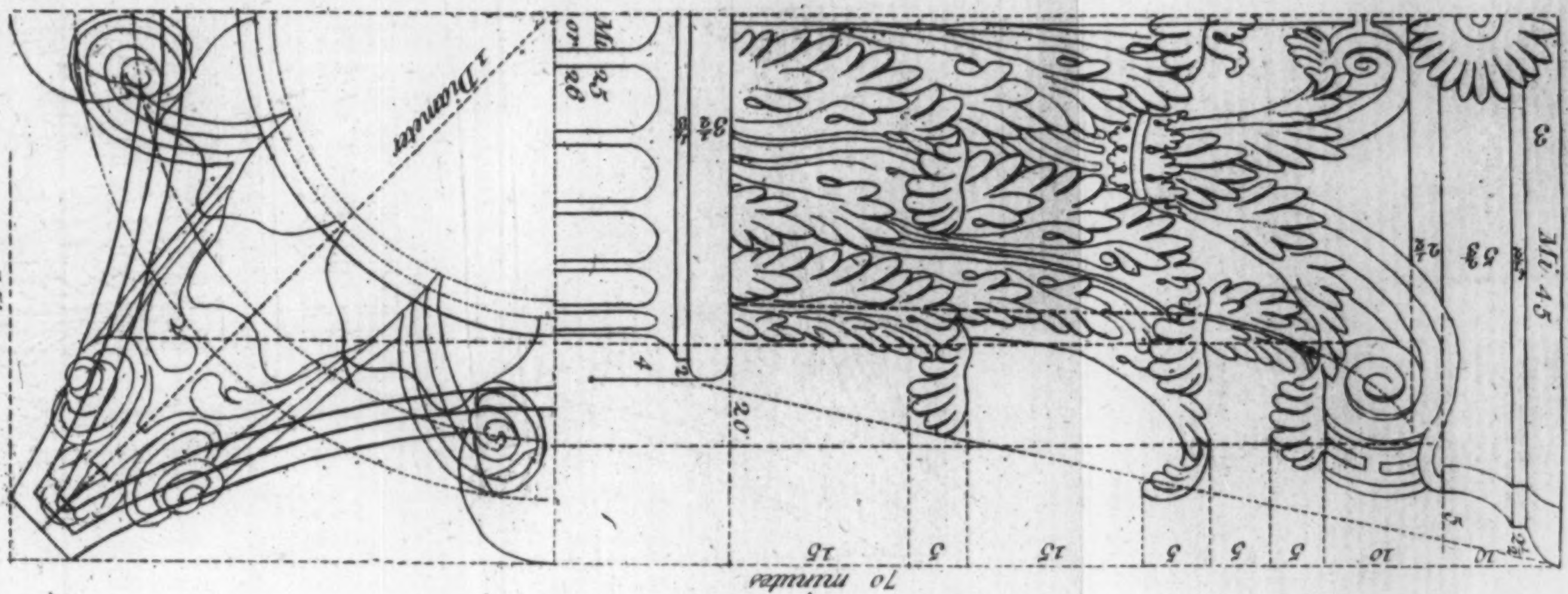
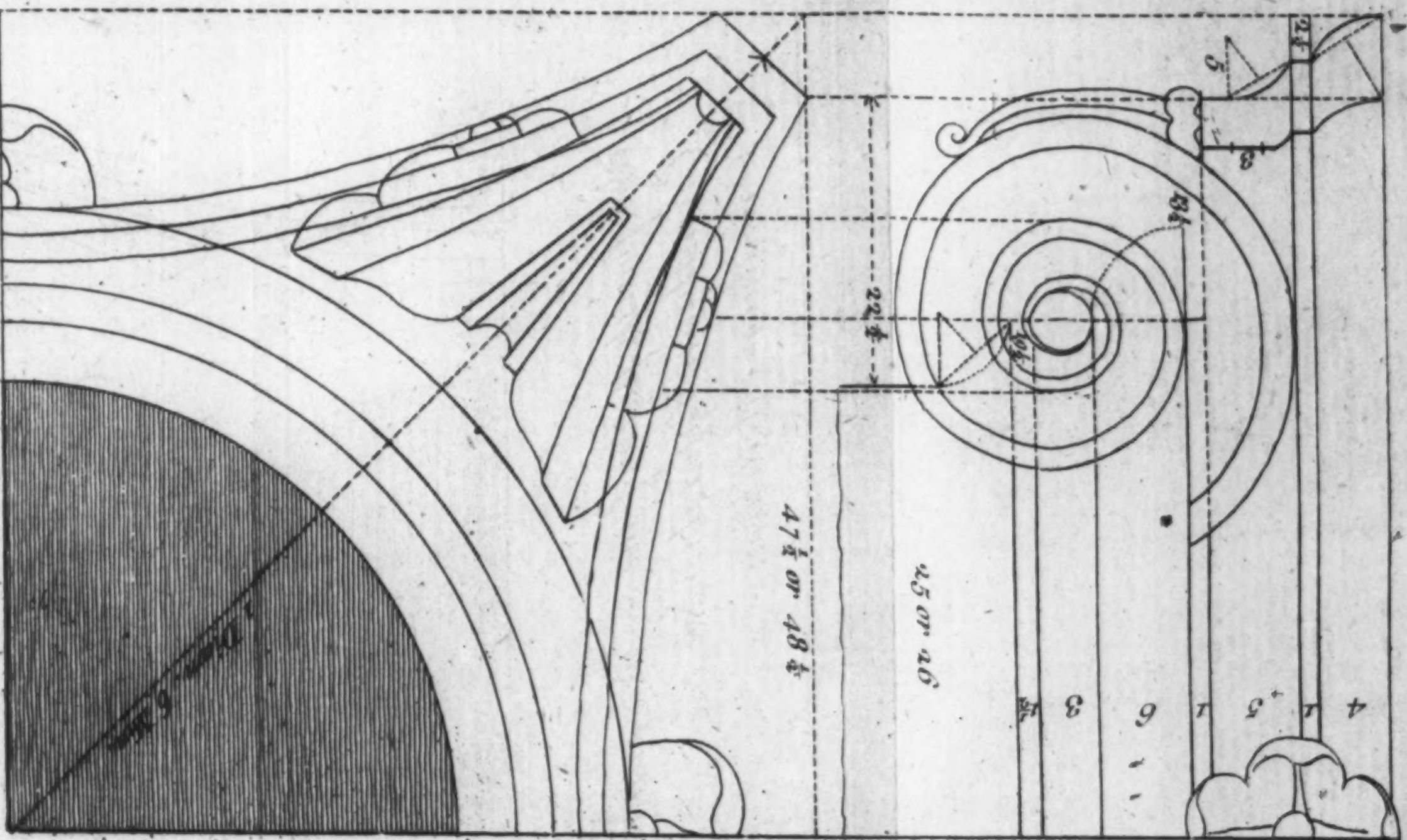
Members in the Corinthian Order.

Regula — — A	Abacus — Z
Cima-recta — B	* Campana, or Bell
Fillet — — C	of the Capital Y
Cima-reversa — D	Semi-plan of Ca-
Corona or Fascia of	pital — W
the Cornice — E	Astragal and Fillet X
Cap of Modillion F	Shaft of Column at
Block Fillet — G	Top — U
Ovolo — — H	Shaft of Column at
Dentile — — I	Base — — T
Cima-reversa — K	Fillet and Bead S
Frize — — L	Upper Torus — R
Planceer or under	Fillet and Bead Q
View of the Cor-	Scotia — — P
nice — — M	Fillet and Bead — O
Tenia — — N	Lower Torus — N
Cima-reversa — O	Plinth — — M
Bead — — P	
Third Fascia — Q	
Cima-reversa — R	
Second Fascia — S	
First Fascia — T	

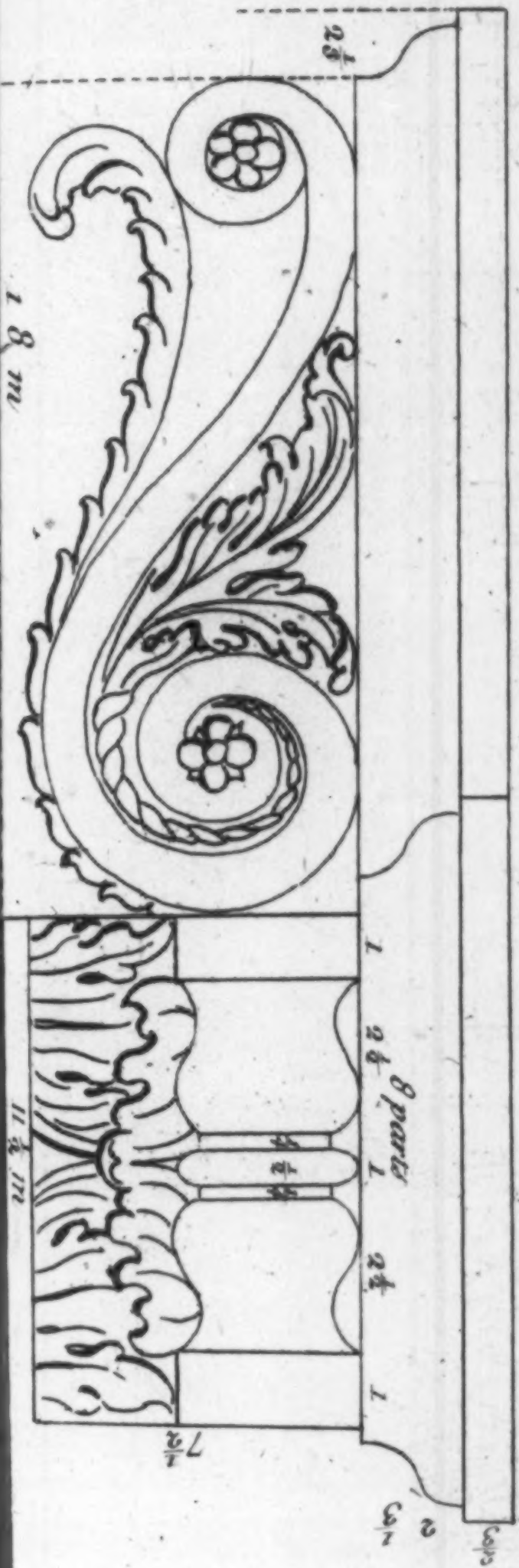
* The Bell of the Capital under the Leaves should stand perpendicular to the Bottom of the Flutes in the Column.

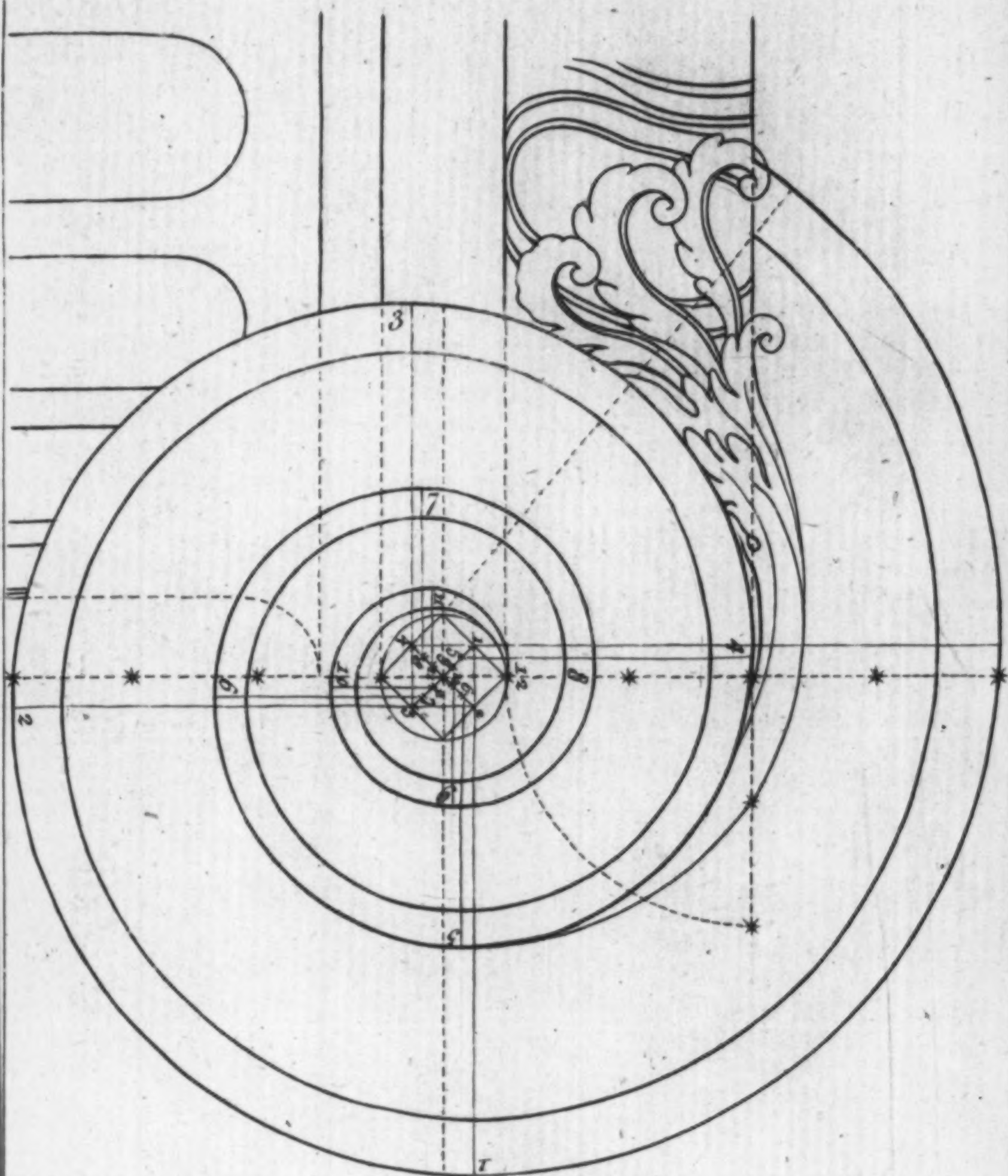






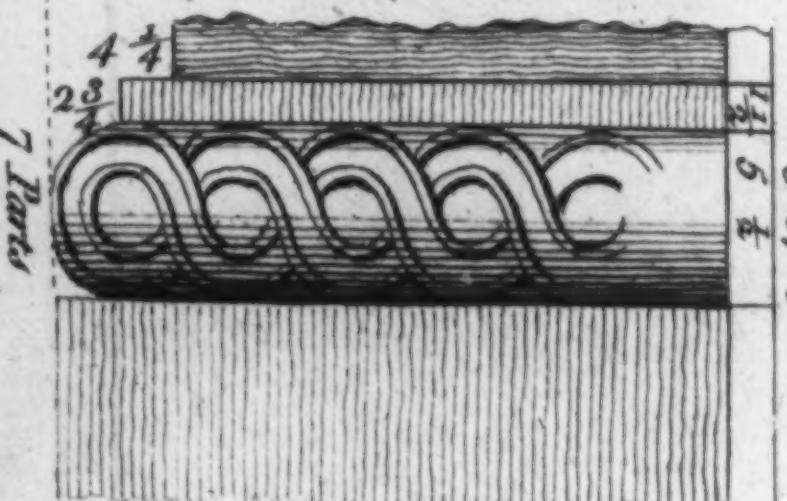
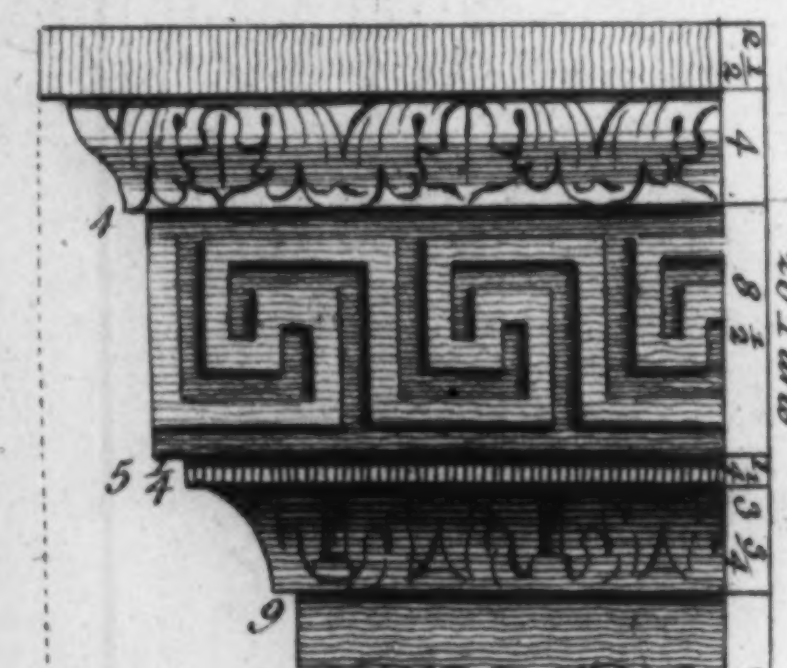
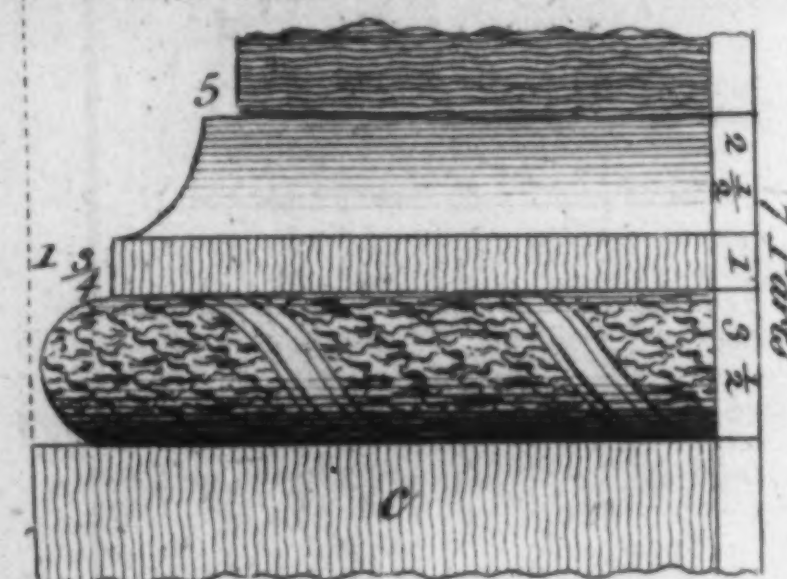
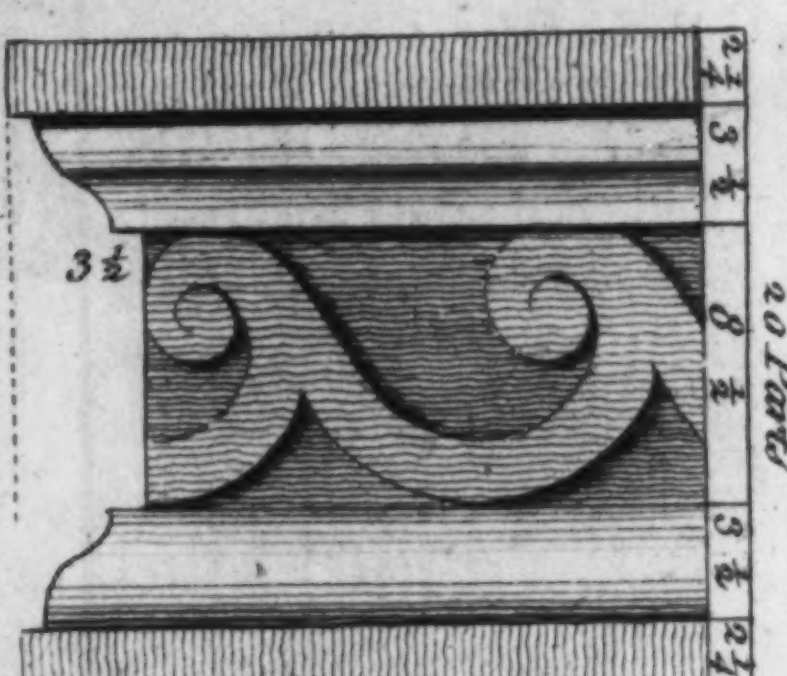
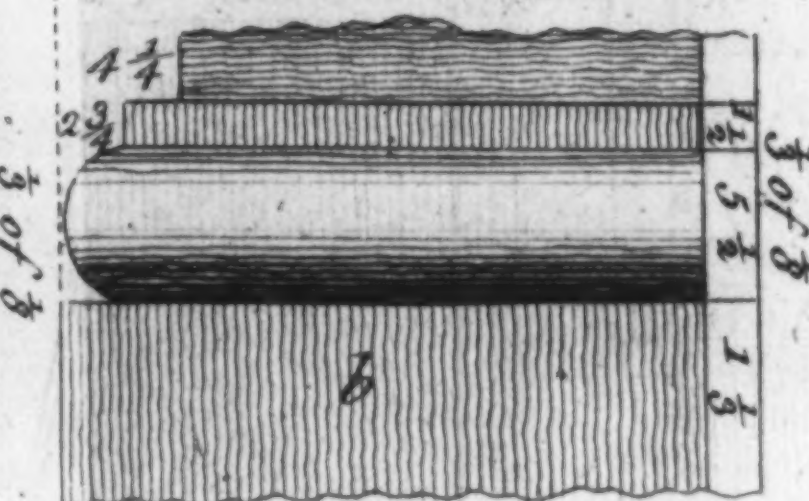
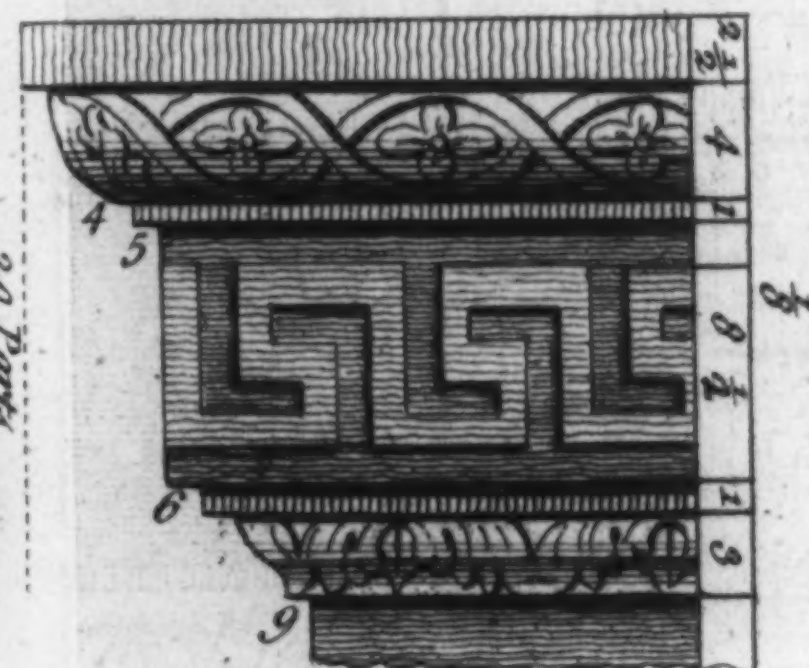
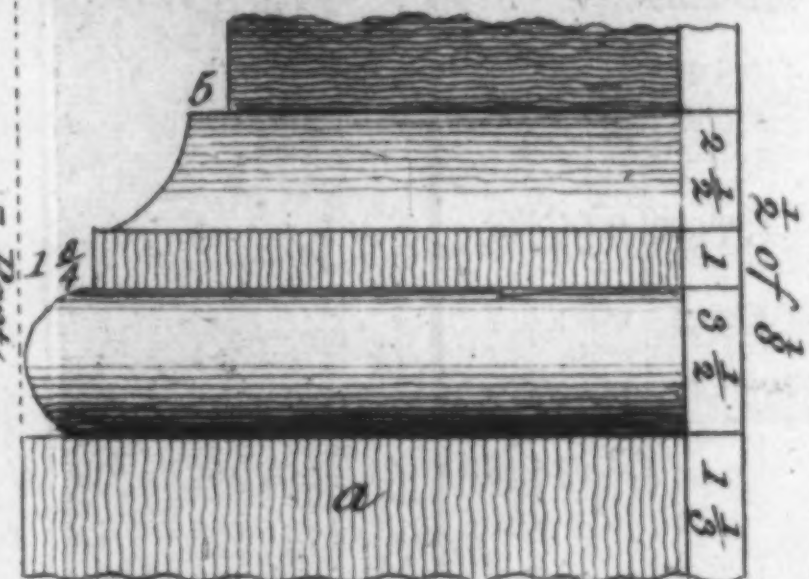
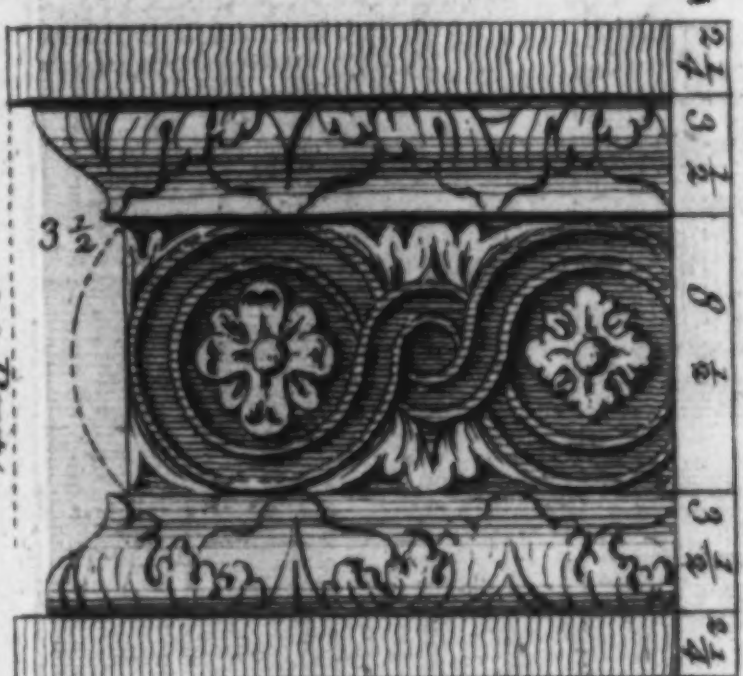
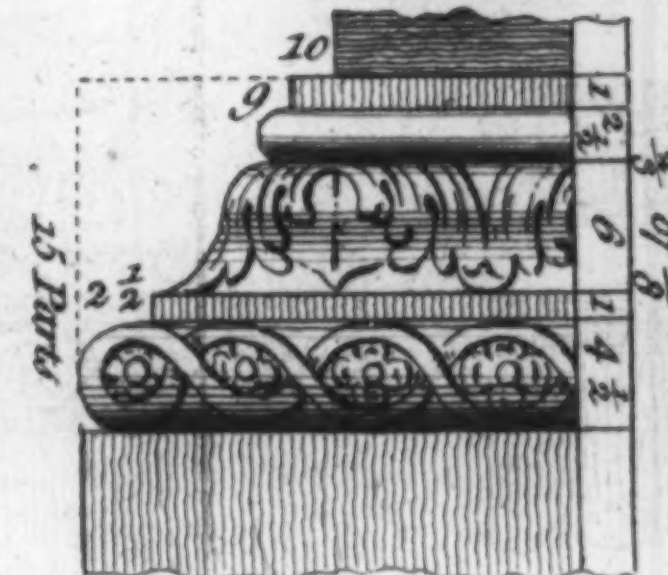
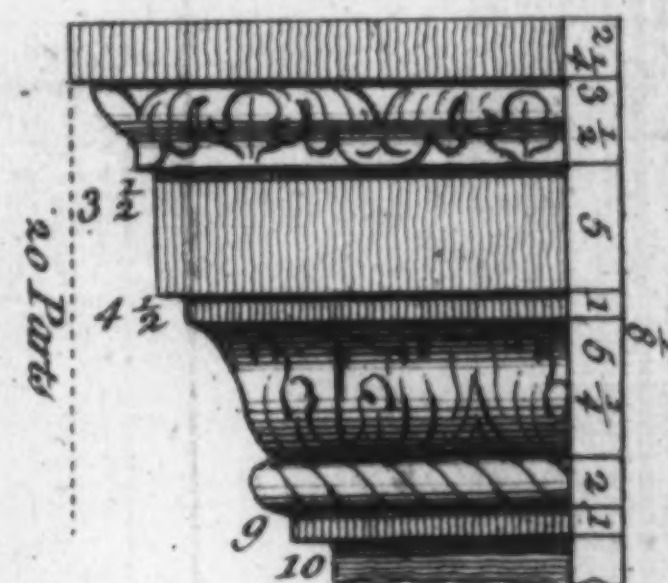
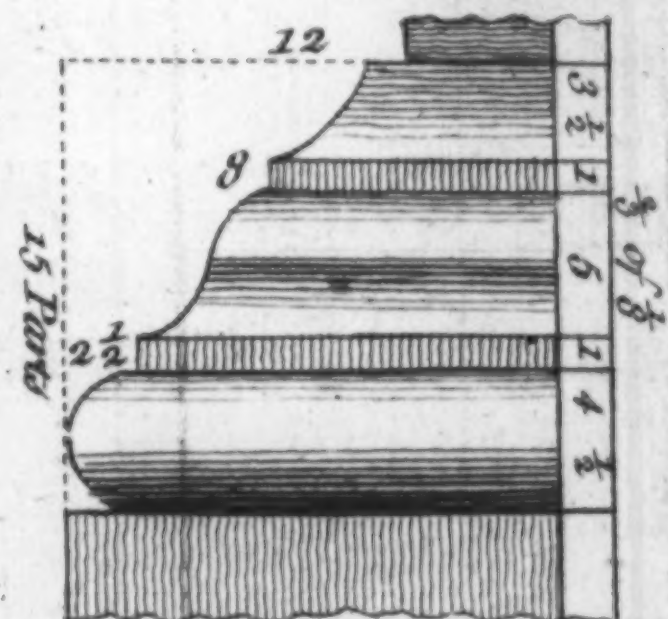
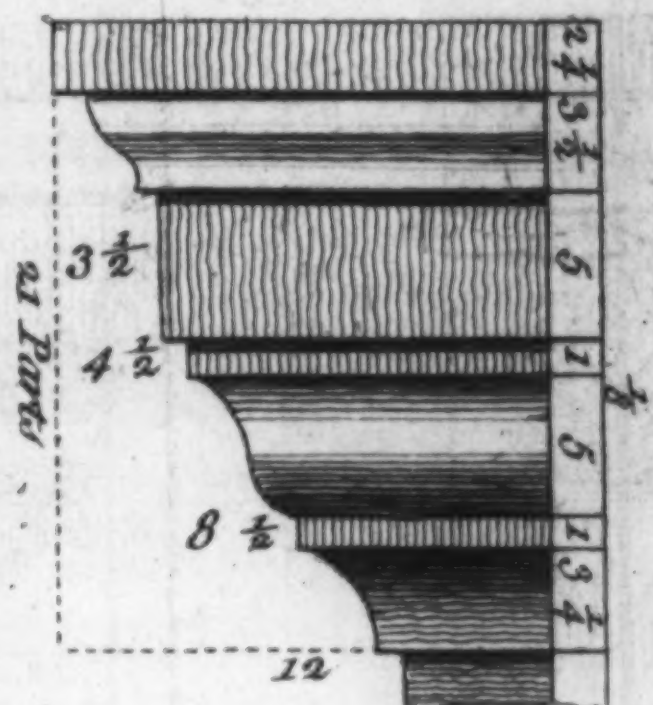
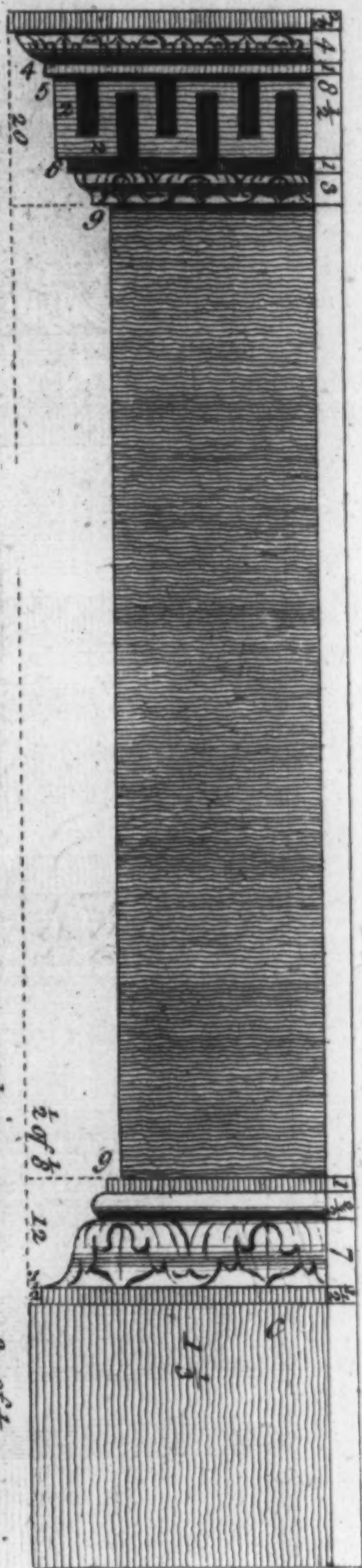
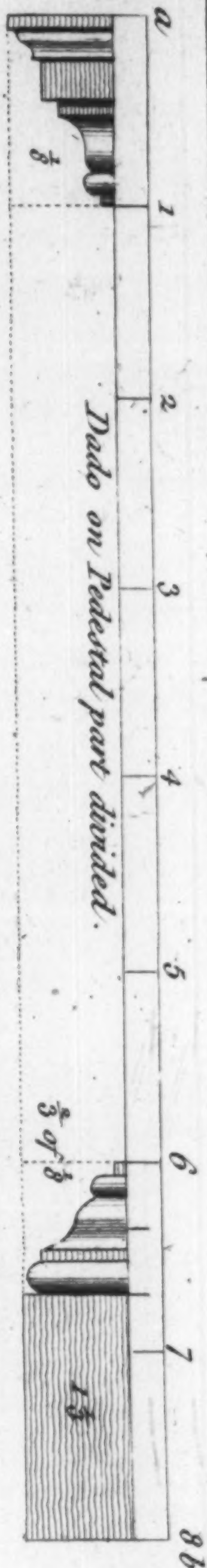
One fourth part of the Ionic and Corinthian Capitals, with the Corinthian Modillion.





The Ionick Volute.





*To proportion the Base and Sub-base for the Dado
or Pedestal Part of Rooms.*

Divide the Height of the Pedestal Part *a b* into eight Parts, and one of these Parts will be the Height of the Sub-base, one and 1-third the Height of the Plinth, 2-thirds the Height of the Base-moulding.

But if the Base marked *b* be used, it is but one Third of one Eighth, and those marked *a c* are each Half of one Eighth.

The Height of the Base and Sub-base to be divided into as many Parts as are figured on the Plate, and disposed to the Mouldings in Height and Projection as is there directed.

*Of glewing and diminishing Columns and Pilasters,
with the Method of Fluting.*

First, of glewing Columns (Fig. C.) which is best to be in 8 or 12 Parts, for then, if fluted, the Joint will be in the Fillet, if rightly managed.

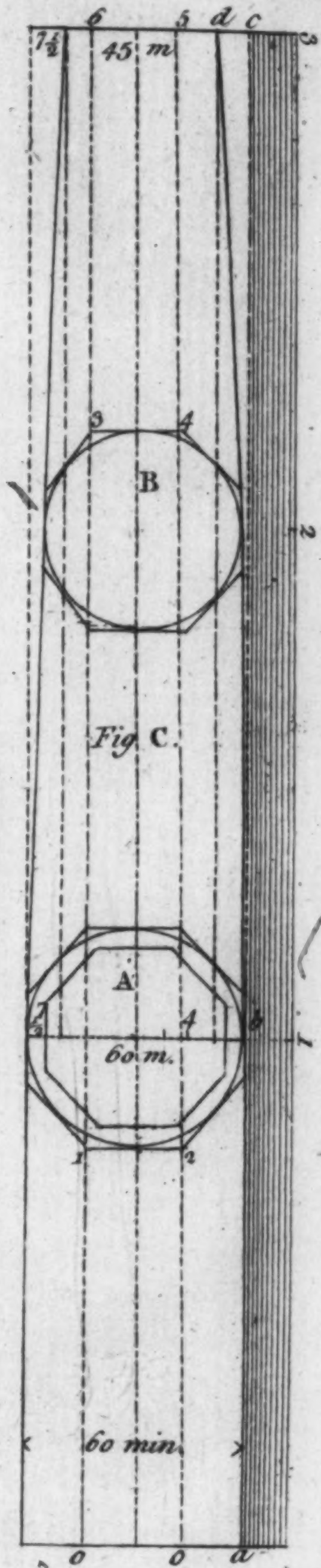
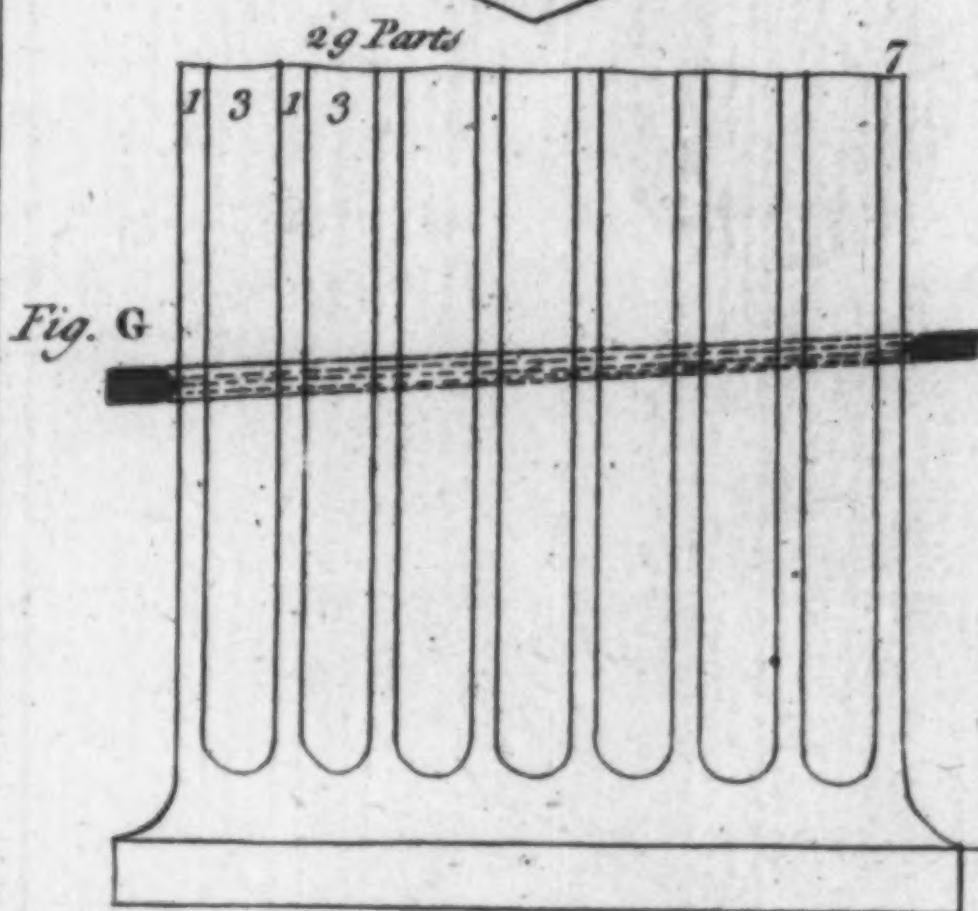
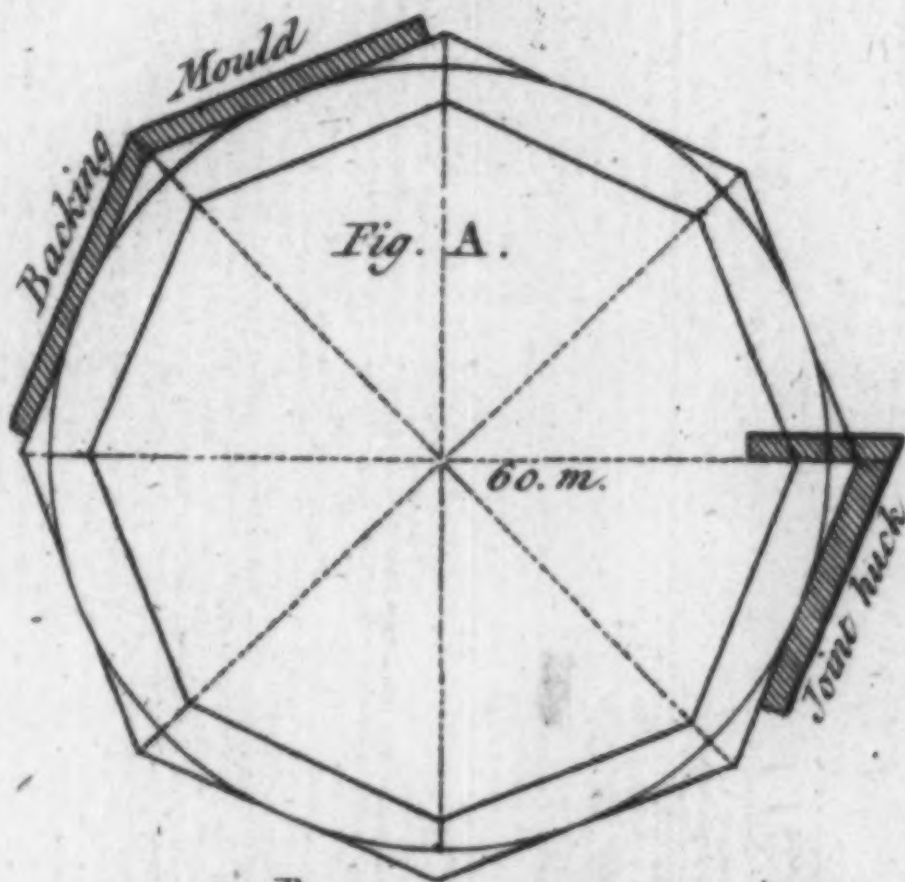
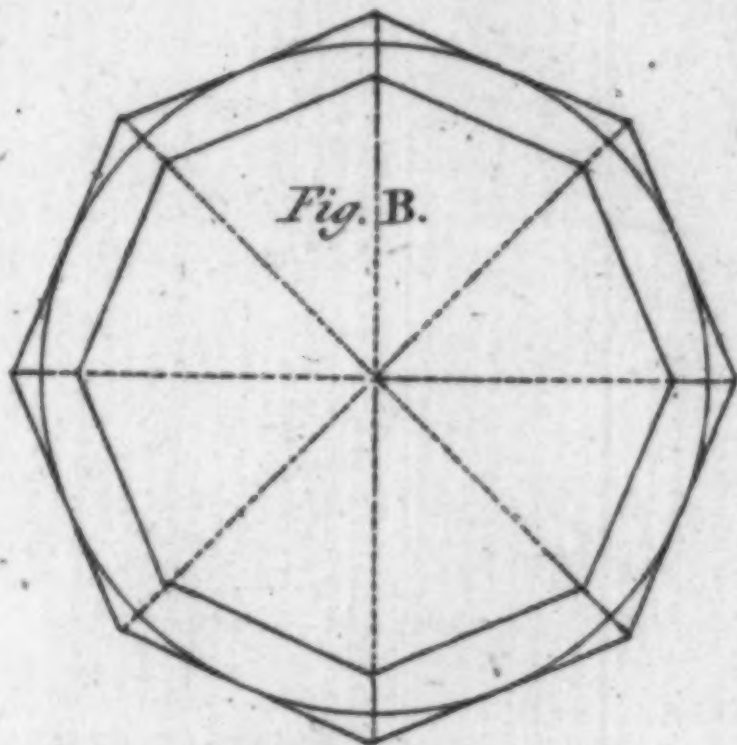
To find the Width of the Stave for compleating the Column, lay down the Diameter of the Column at $\frac{1}{3}$ of the Height, as at A, and also the Diameter you shall find it have at $\frac{2}{3}$ of the Height, as at B; then divide those Diameters into eight Parts each, or twelve, if required, and draw the dotted Lines 0, 1, 3, 6, and 0, 2, 4, 5, which will be each $\frac{1}{8}$ or $\frac{1}{12}$ of the Column.

To make the diminishing Board, divide the Length of the Shaft into three equal Parts, make one streight Edge to the diminishing Board, and run a Gage as the dotted Line *a b c*; then (according to what the diminishing is as figured on the Top of each Column) set it on from *c* to *d*, and tack in Nails as at *a b d*, hold a thin Slip true to the first third Part of the Column *a b*, and bend it round to *d*, and mark as that Curve directs, which will be the diminishing Edge.

If the Column be fluted, divide the Circumference at Bottom and Top into ninety-six Parts, give three to a Flute and one to a Fillet, and with the streight Edge of the diminishing Board draw the Lines.

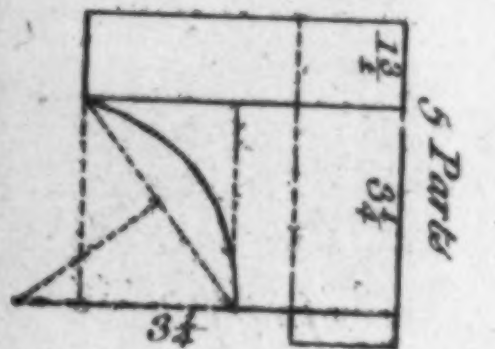
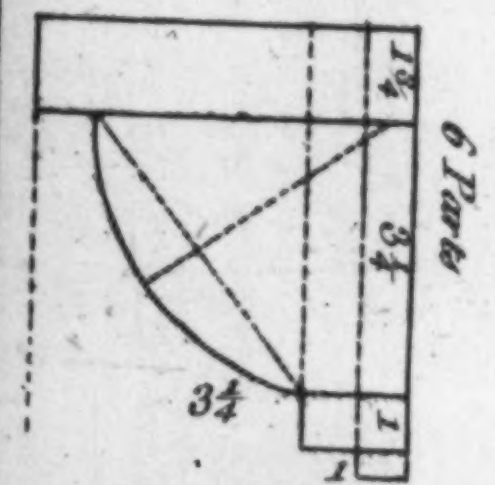
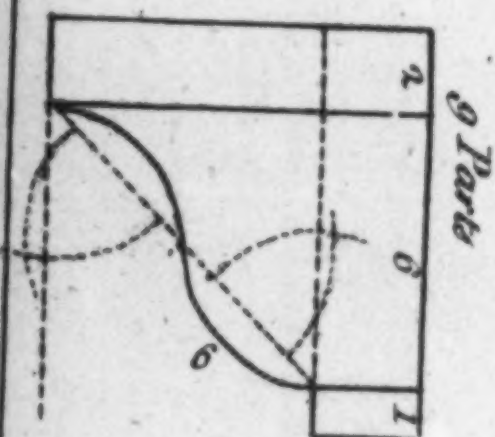
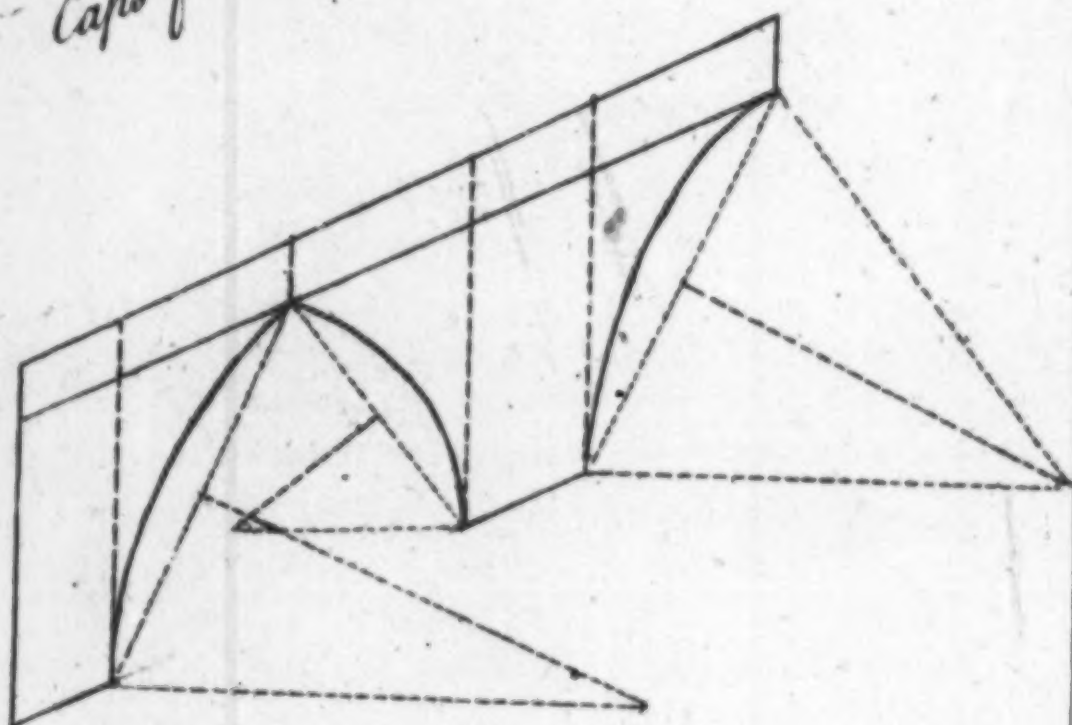
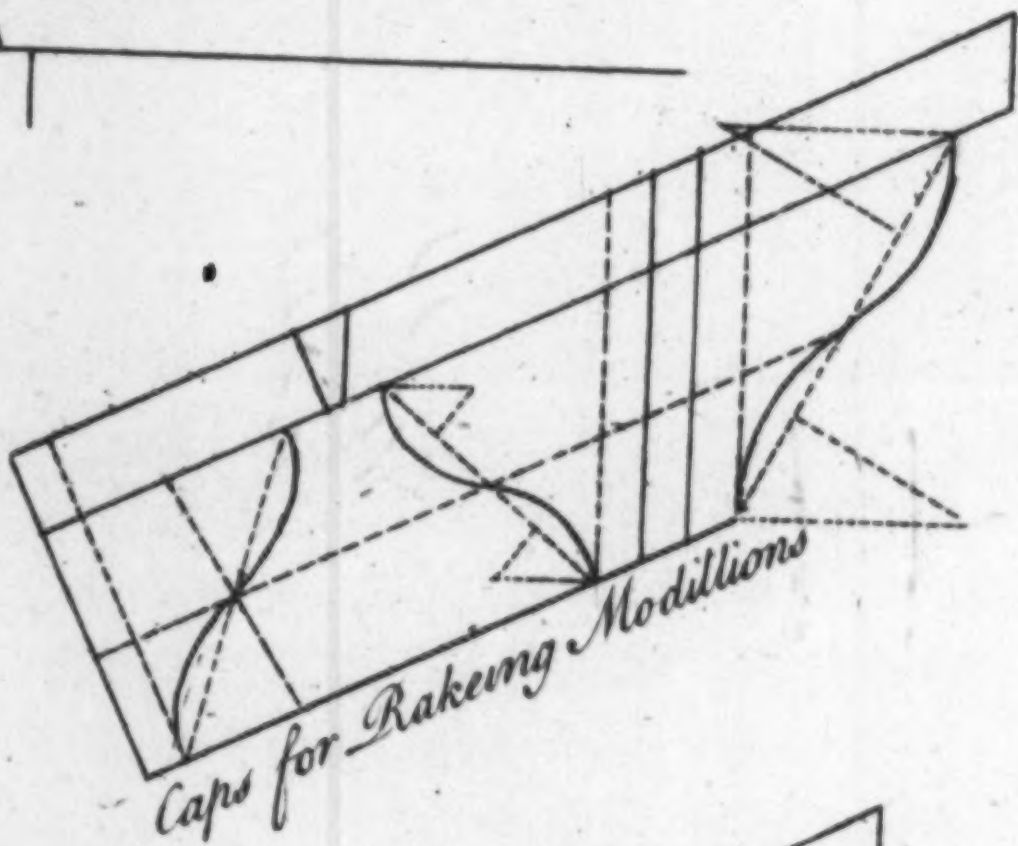
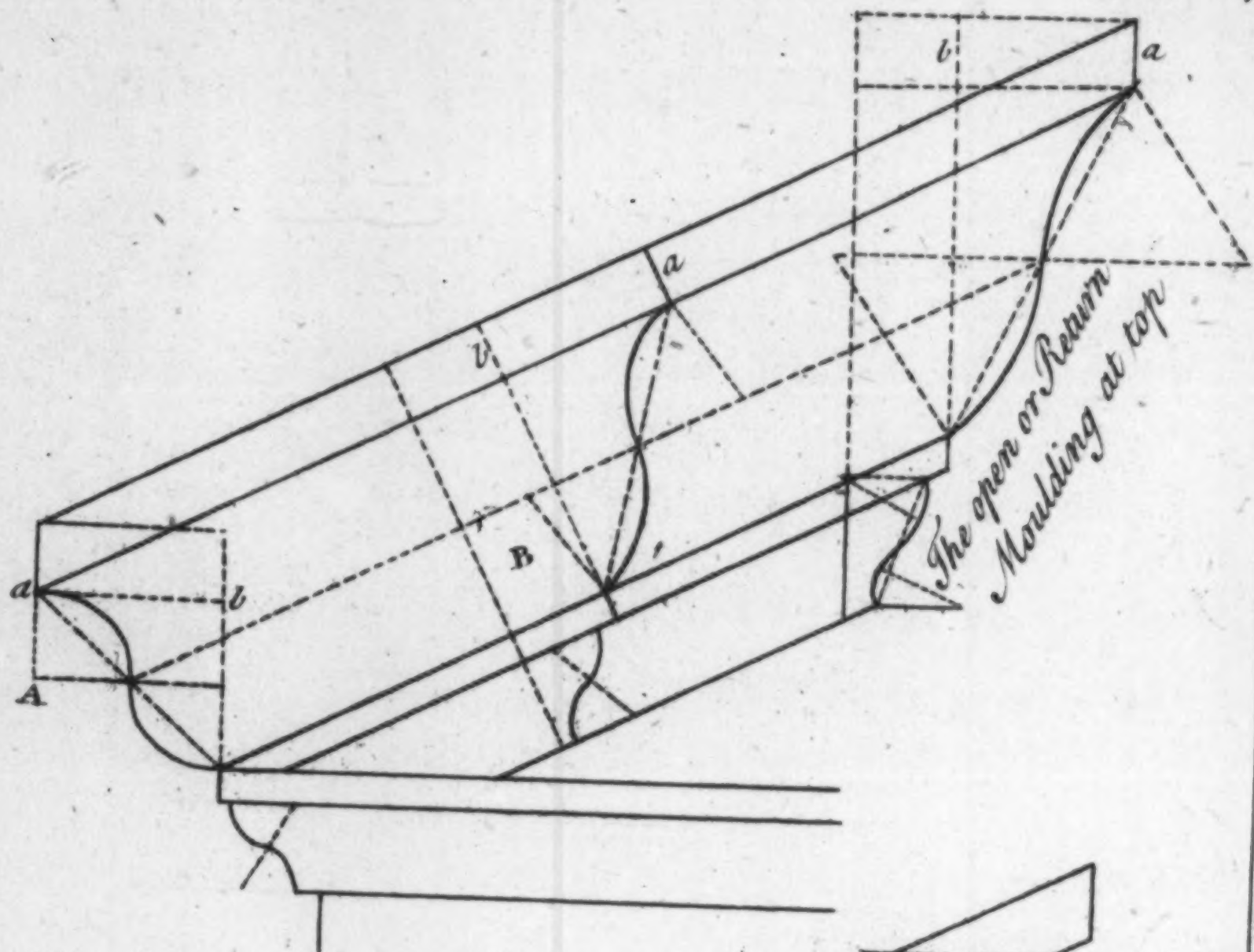
If Pilasters are fluted, divide the Width into twenty-nine Parts, and give one to a Fillet and three to a Flute.

To make the Gage, cut the Ends to a Point as Fig. G, and it will run with the diminishing.









In drawing the raking Cornices to Pediments, and the Capping for raking Modillions, make the Projections *a b* equal to each other, and let the Curves or Face of the given Ogee be each a Quarter of a Circle; the Centers must be always level or at right Angles with the Projections, as in Plate 13.

Let the Height or Pitch of your Pediment be a Fourth or two Ninths of its Width.

*To proportion Architrave Frontispieces to Doors,
Windows, &c.*

Divide the Door or Window into six equal Parts, and let one be the Width of the Architrave, then divide the Architrave into six Parts, and give five to the Frize, and seven to the Cornice; then divide the Cornice into as many Parts as are figured on the Plate, which are to be disposed to the Mouldings in Height and Projection as is there directed.

For the Faces and Mouldings of the Architrave, divide the Architrave into twelve Parts, and dispose them as figured Plates 15 and 16.

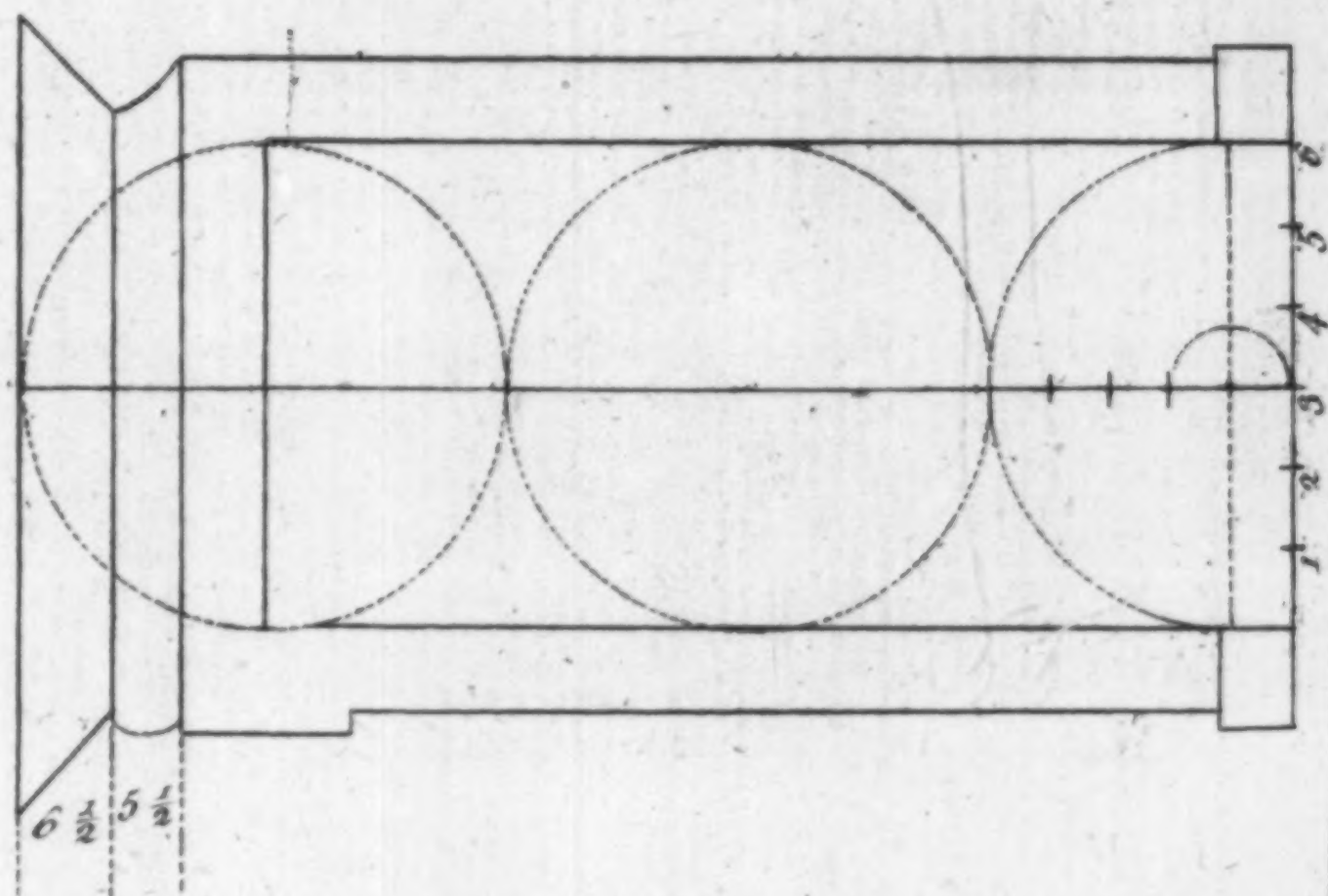
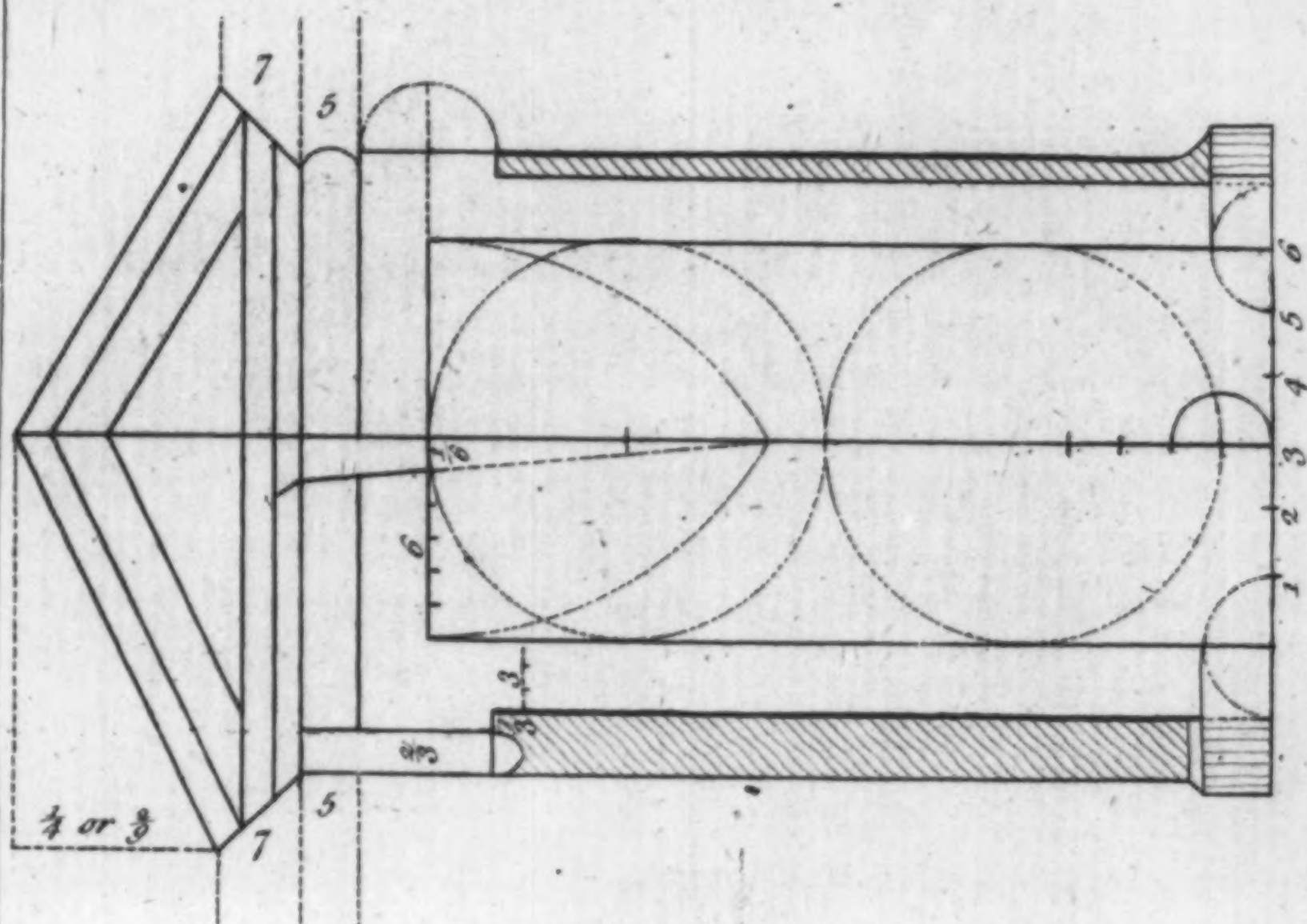
Let the Height of the Knee be twice the Breadth of the Architrave, and the Projection one Third of the Architrave's Breadth.

Make the Width of the Truss in Front two Thirds of the Architrave's Breadth, and its Profile equal to the Breadth of the Architrave.

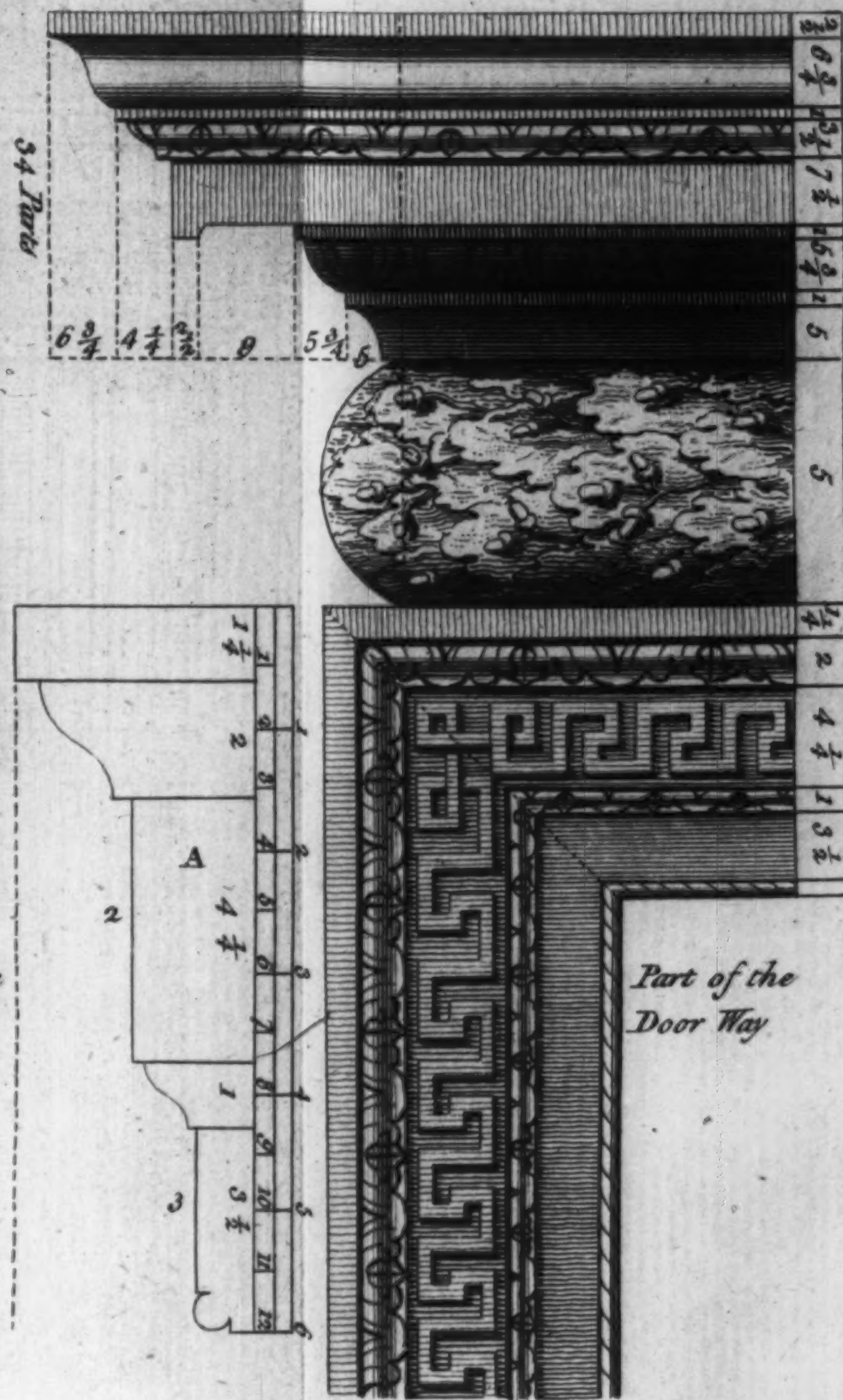
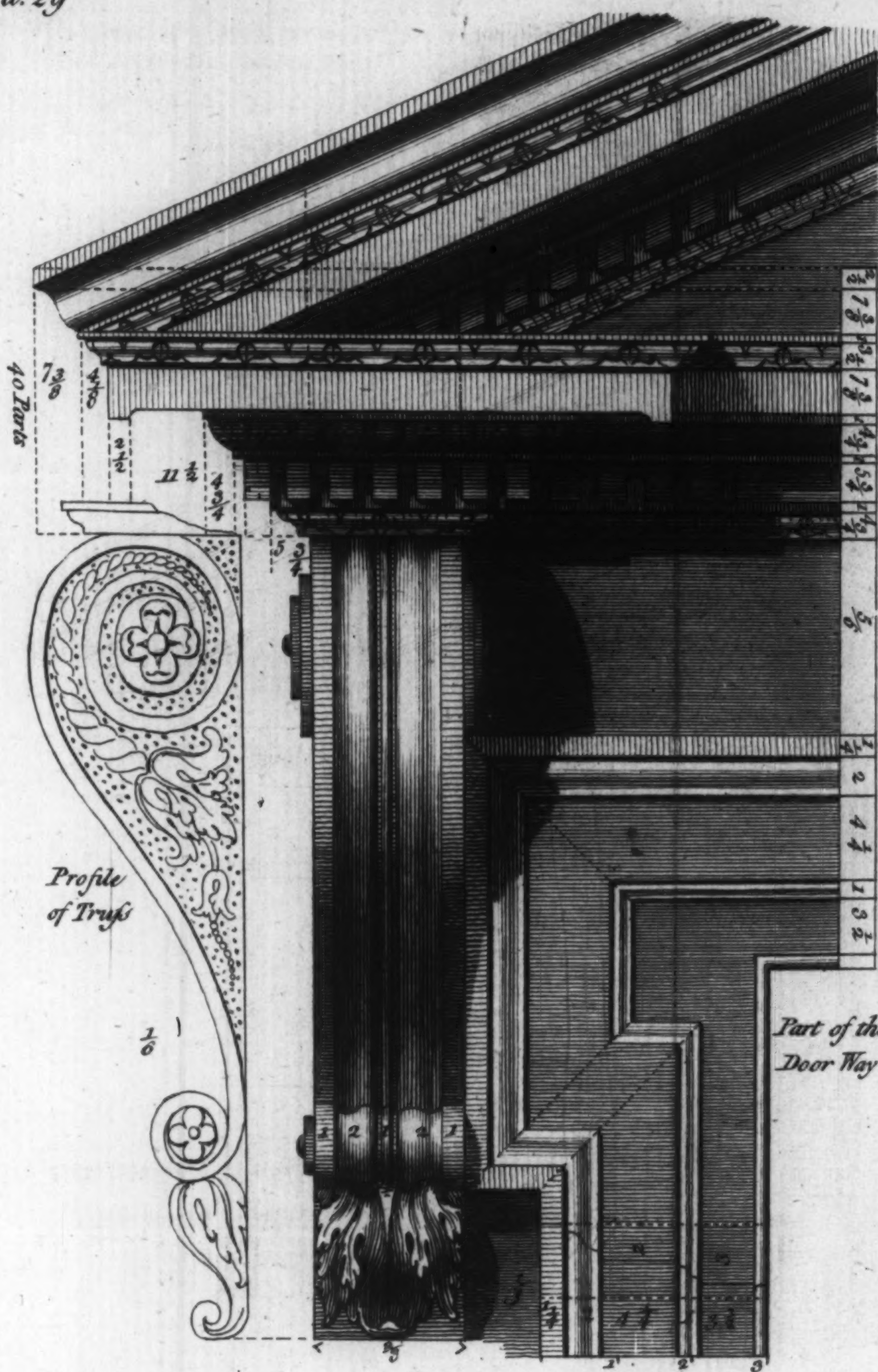
The Breadth of the Dentile should be equal to two Thirds of its Height, and the Space between them one Third of the Height, or half its Breadth.

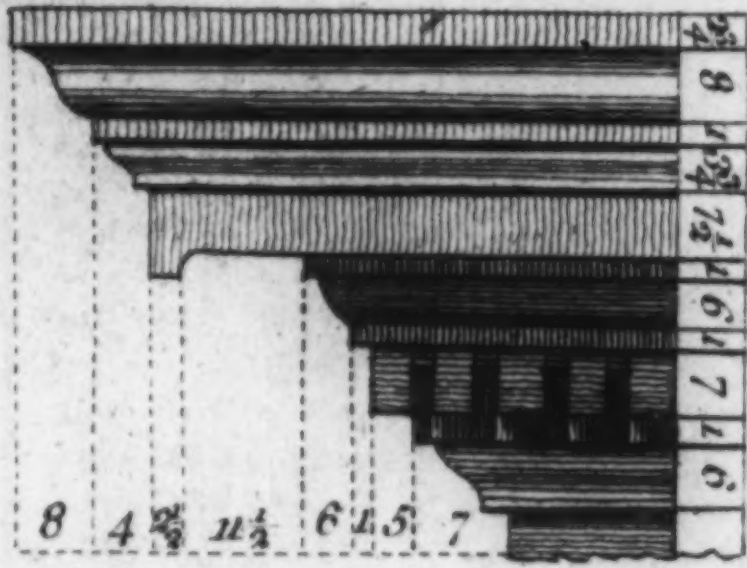
Note, The Frize may be five Parts and a half, and the Cornice six Parts and a half in small Rooms, where it is required they should be light.

The Architraves, Frizes, and Cornices at large, Plates 15 and 16.

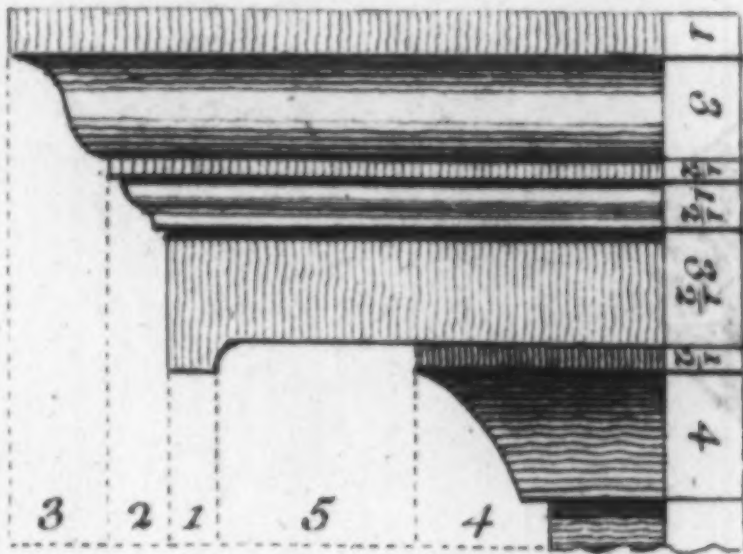
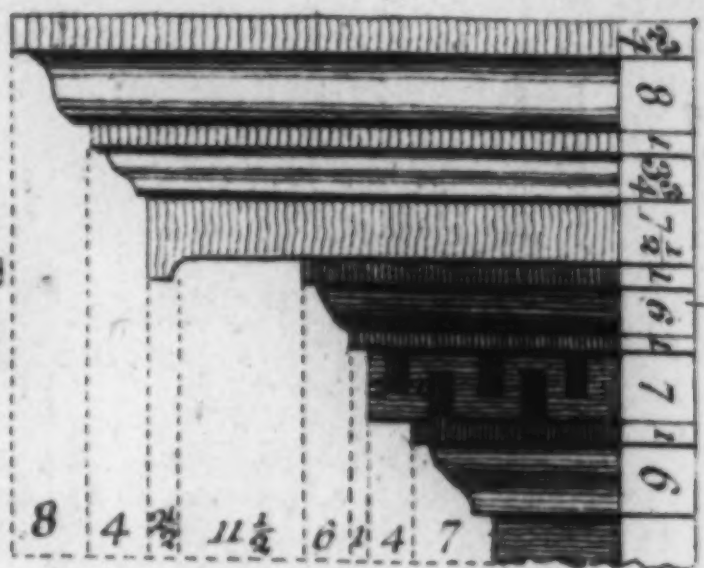




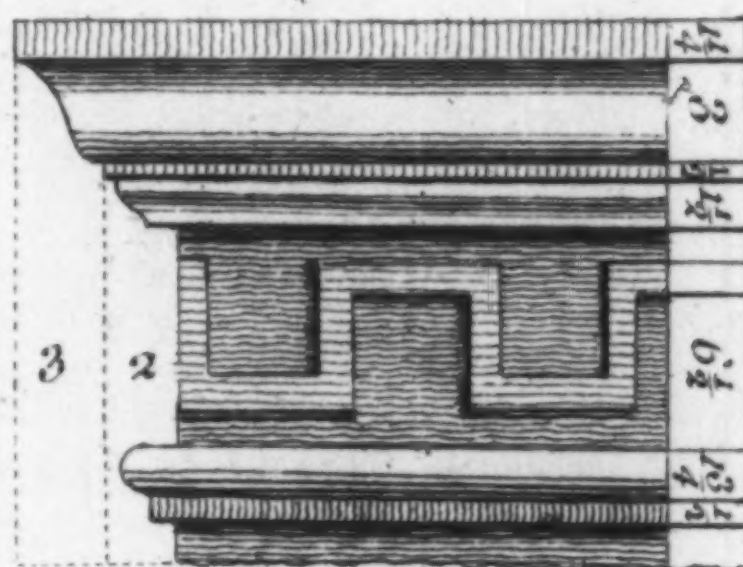
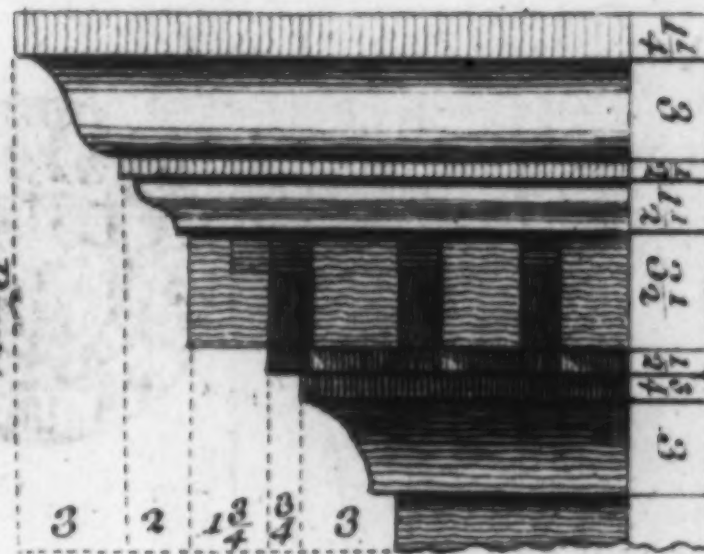




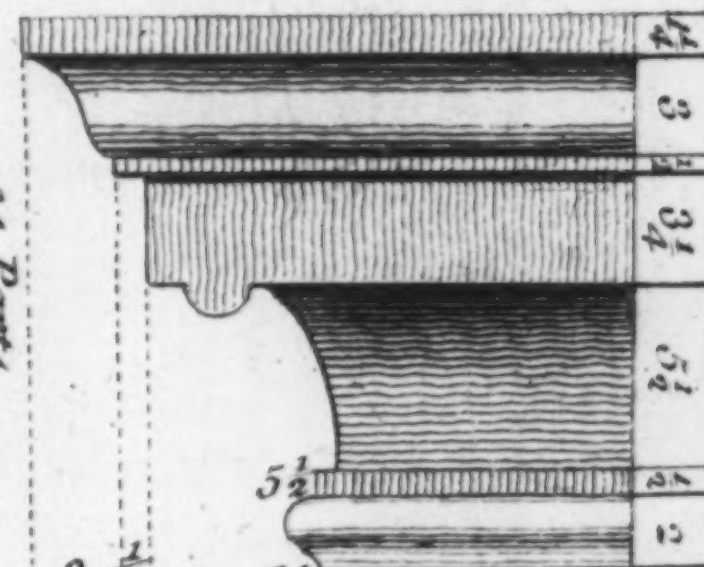
45 Parts



14 Parts



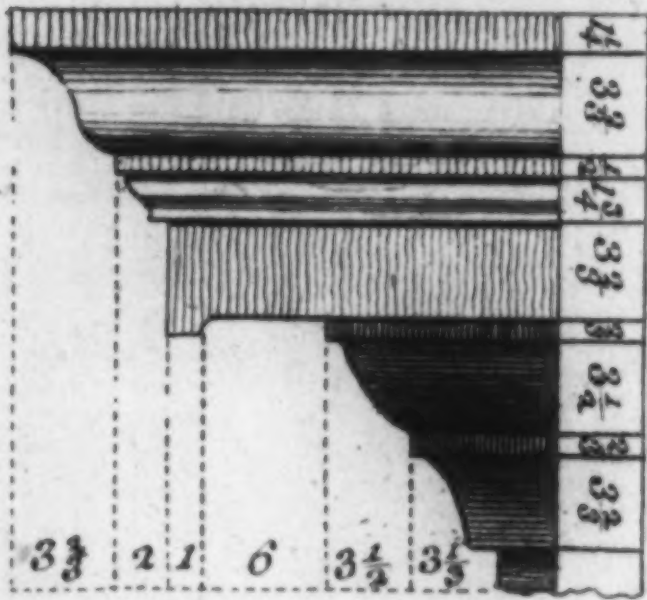
14 Parts



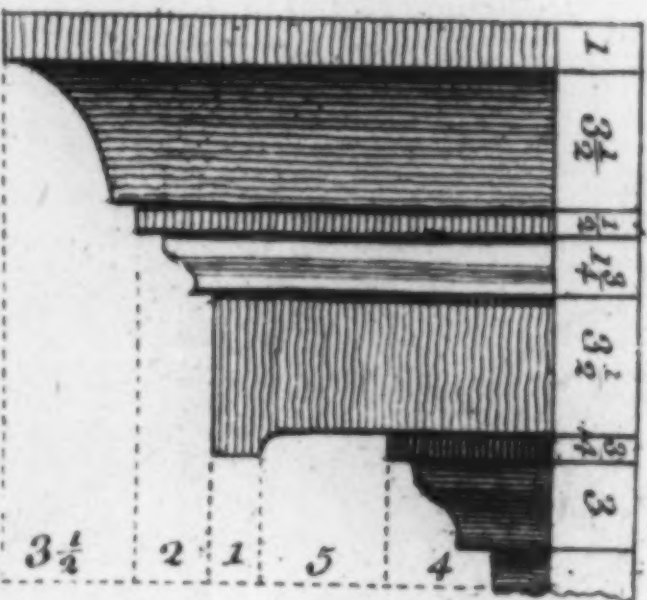
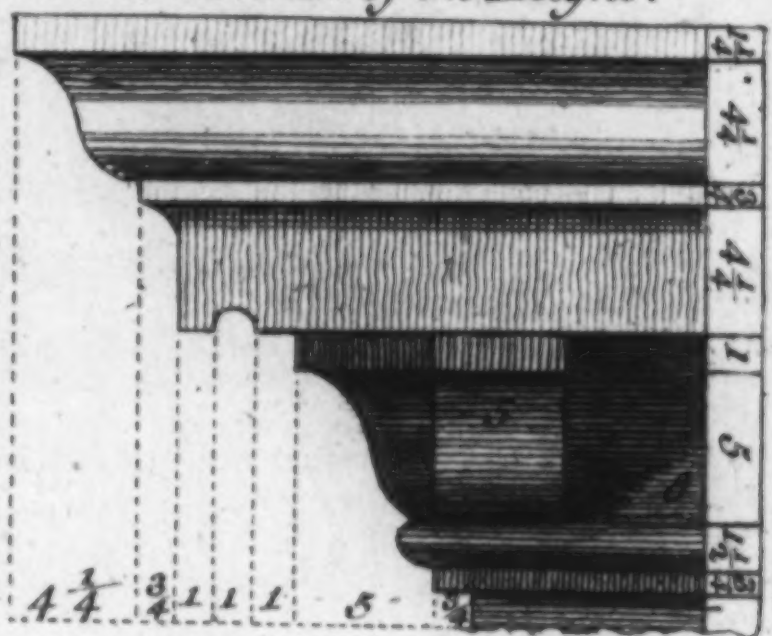




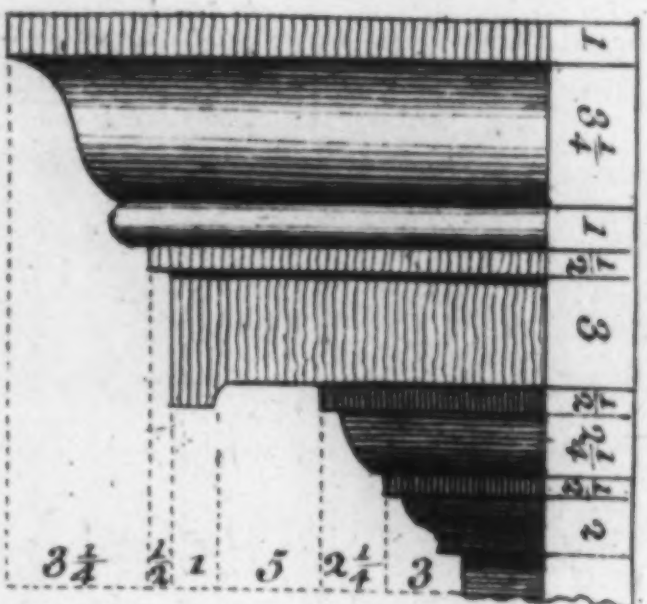
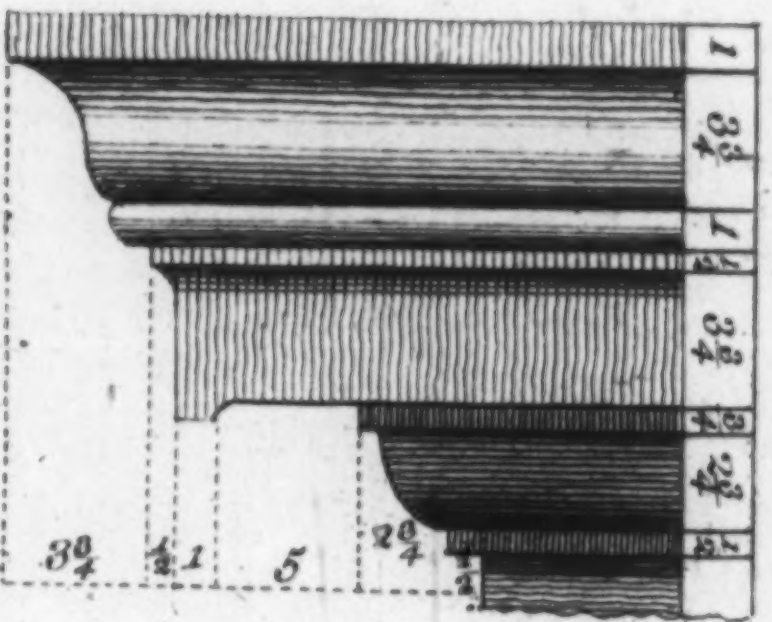
Cornice one 16th Part or one 18th Part of the Height.



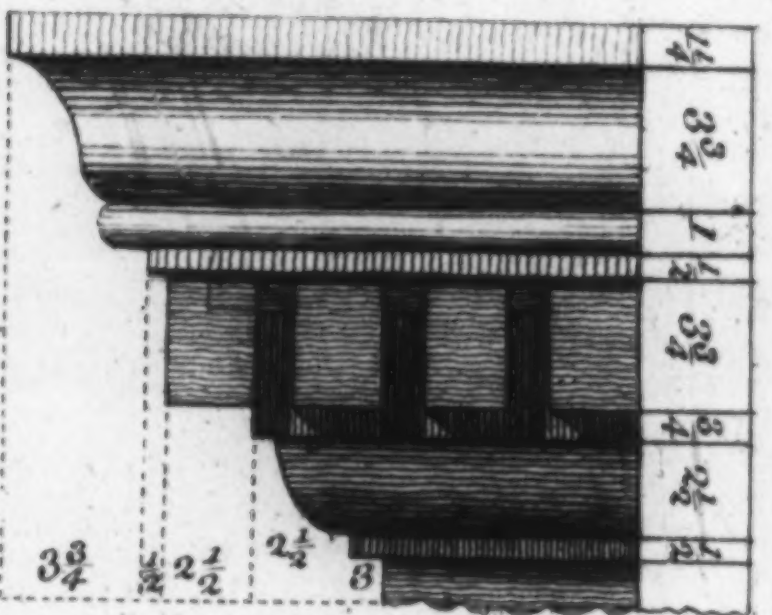
16 Parts



14 Parts



14 Parts



*To proportion Cornices to Rooms or any Place
required.*

Divide the whole Height of the Room or Building into sixteen Parts, one of which will be the Height of the Cornice, which is to be divided, and the Parts disposed to the Mouldings in Height and Projection as figured on the Plate.

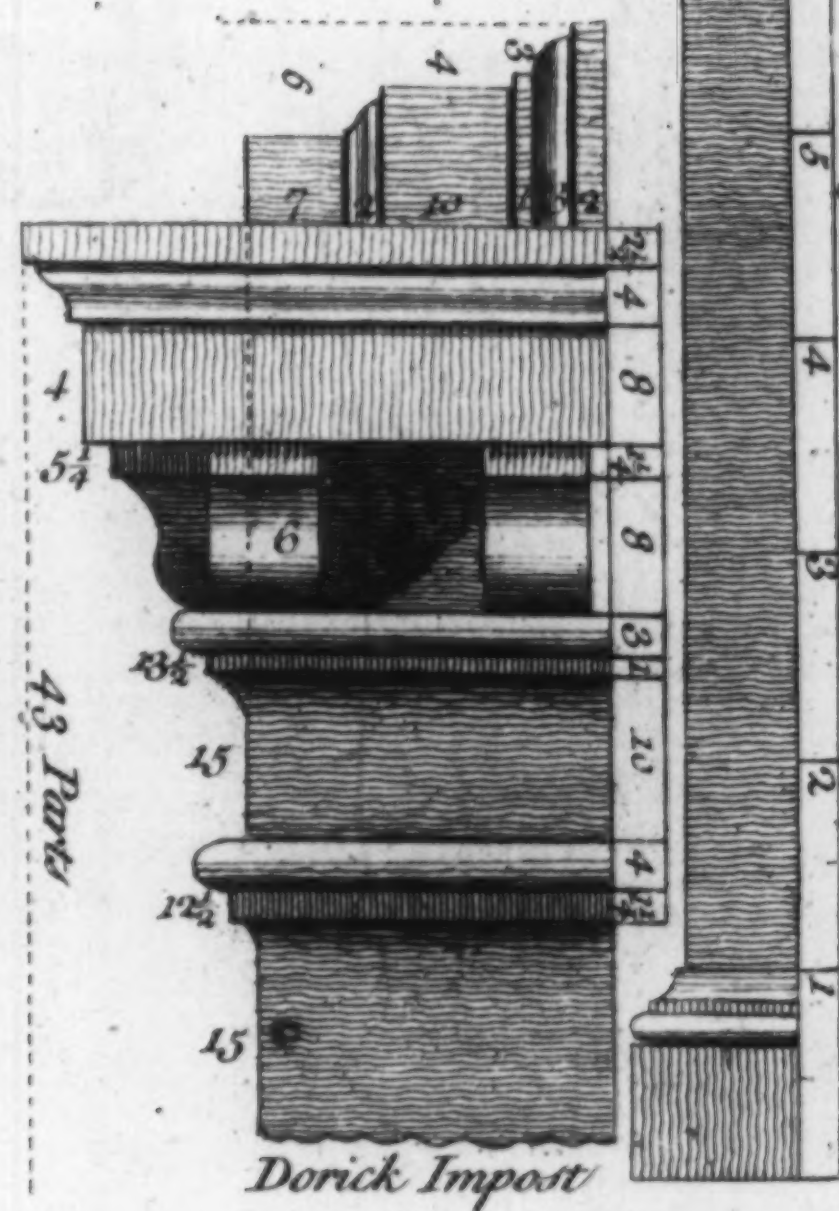
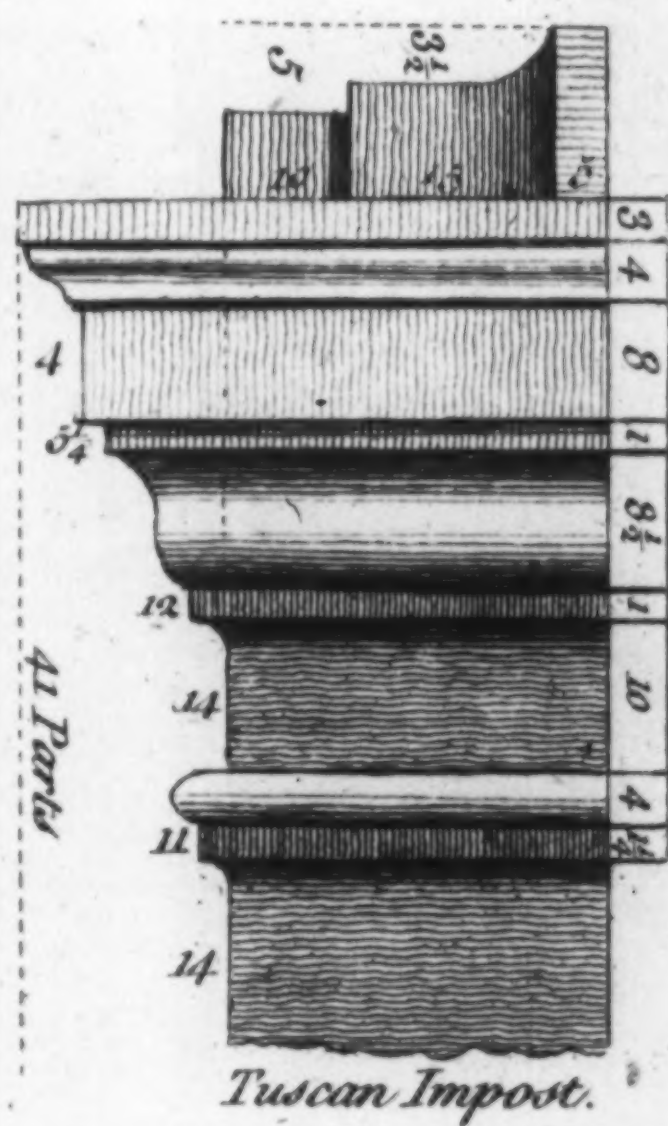
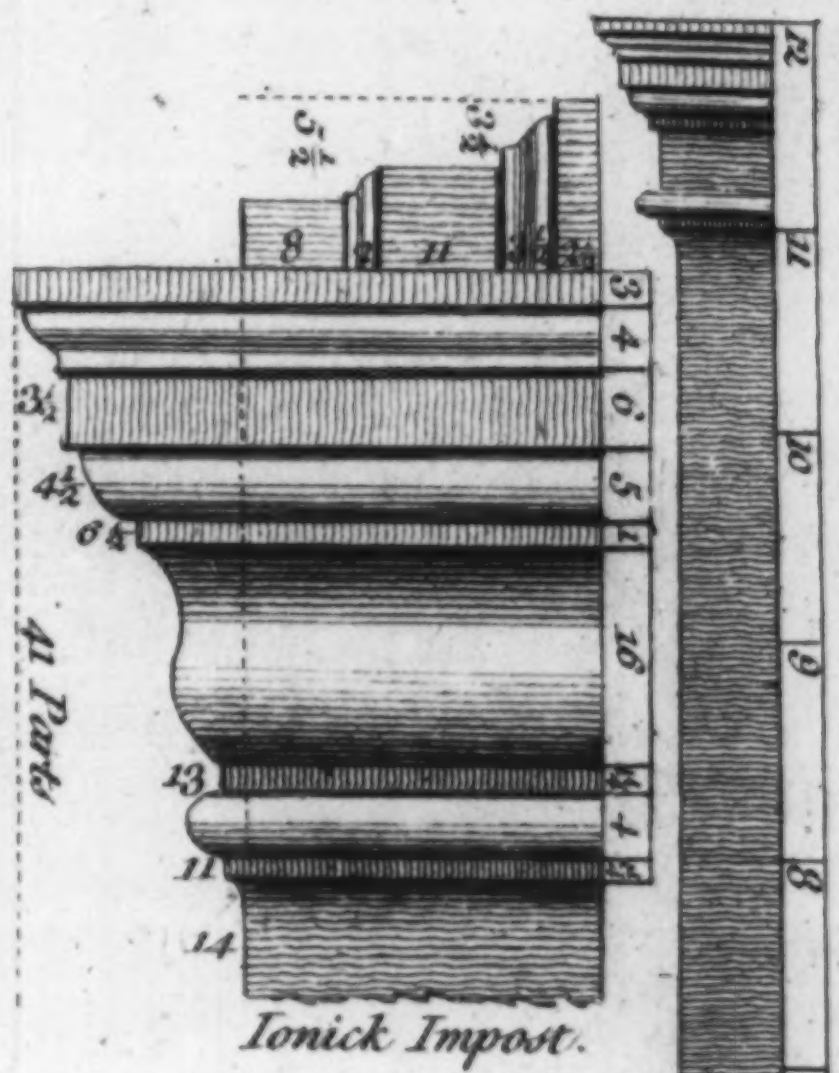
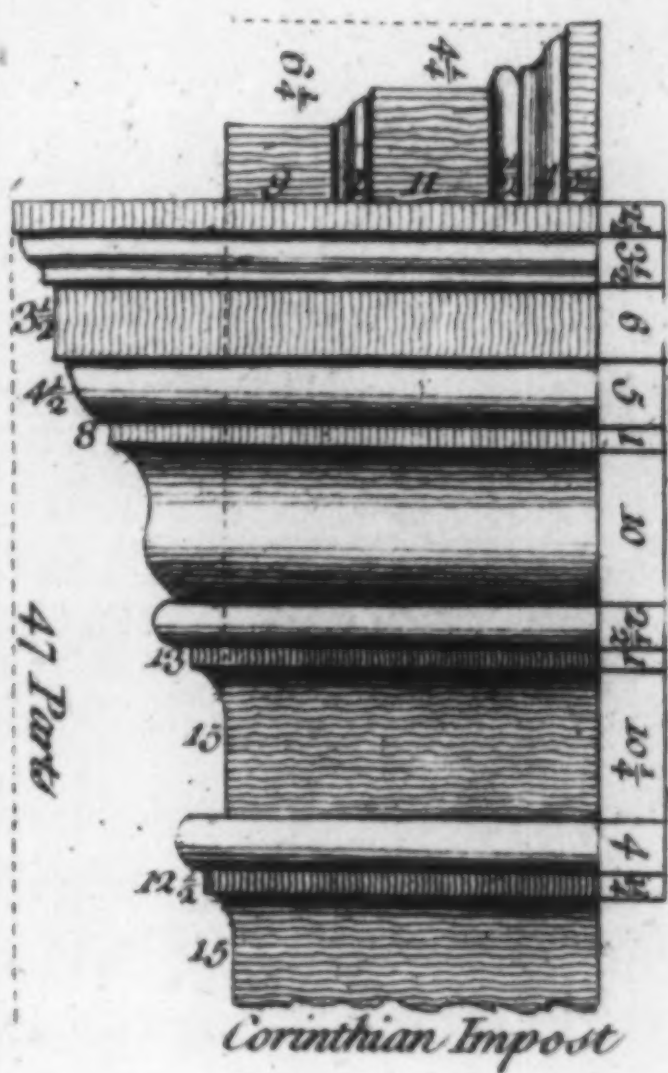
Or divide the Height into eighteen Parts, and make one the Height of the Cornice.

Either of these Proportions may be used at Pleasure.

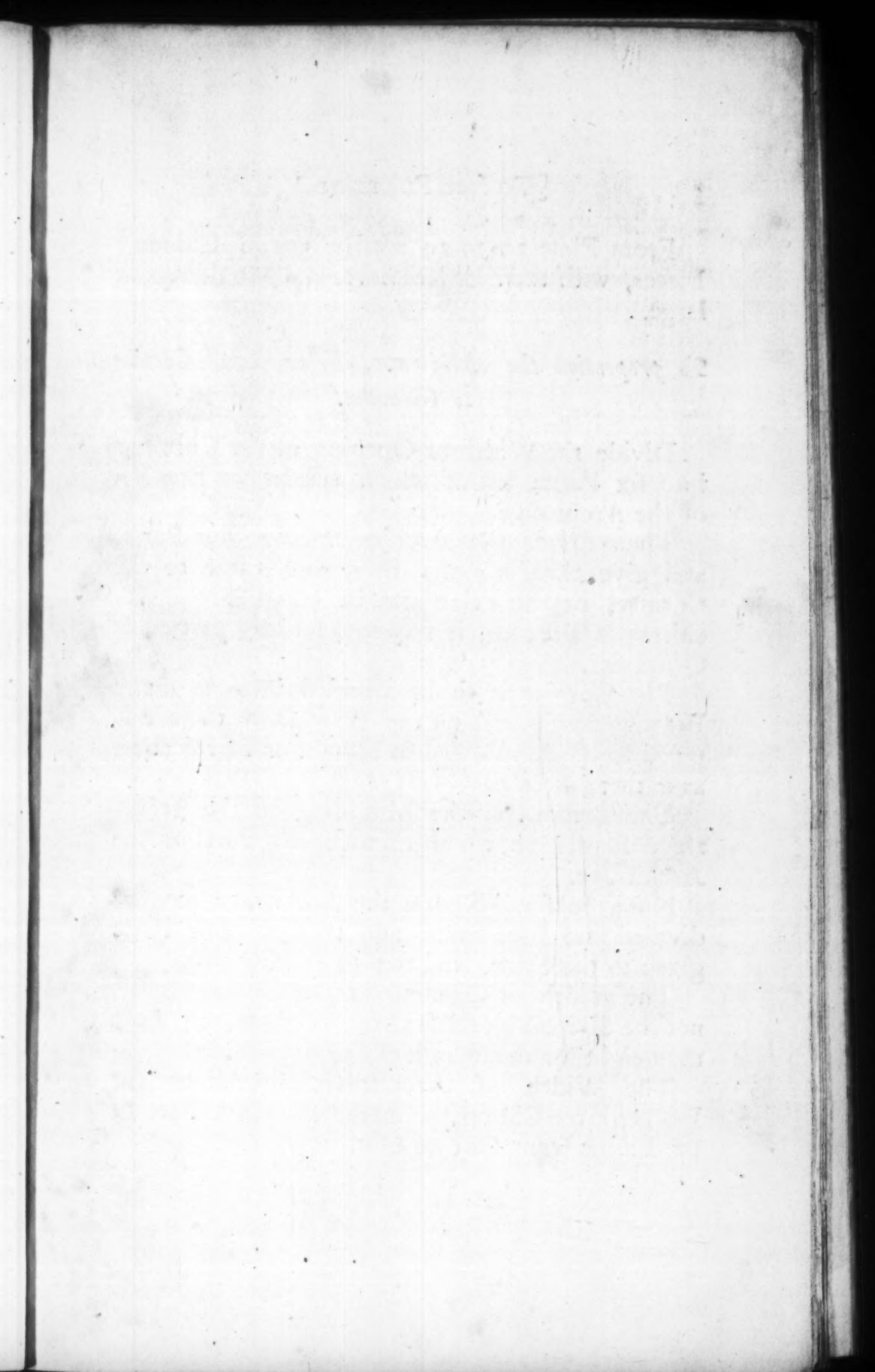
If the Cornices of any of the five Orders are used, without the Architrave and Frize, their Height must be $\frac{1}{8}$ or $\frac{1}{18}$ of the Building, as above, and divided into as many Parts as there are Minutes in the whole Cornice, which are to be disposed according to the Directions in each Order.

To proportion the Impost to Arches, &c.

Divide the Height, from the Ground or Floor to the Springing of the Arch, into twelve equal Parts, and one of these Parts will be the Height of the Impost; then divide the Height of the Impost into as many Parts as are figured in the Plate, and dispose them to the Moulding in Height and Projection as is there directed.







From Plate 20 to 29 are Designs of Chimney Pieces, with their Entablatures and Mouldings at large.

To proportion the Architrave, Frize, and Cornice to Chimnies.

Divide the Width or Opening of the Chimney into six Parts, one of which will be the Breadth of the Architrave.

Then divide the Architrave into four Parts, and give three to the Frize and three to the Cornice, or the Frize may be equal to the Architrave's Breadth, if required for any particular Ornament.

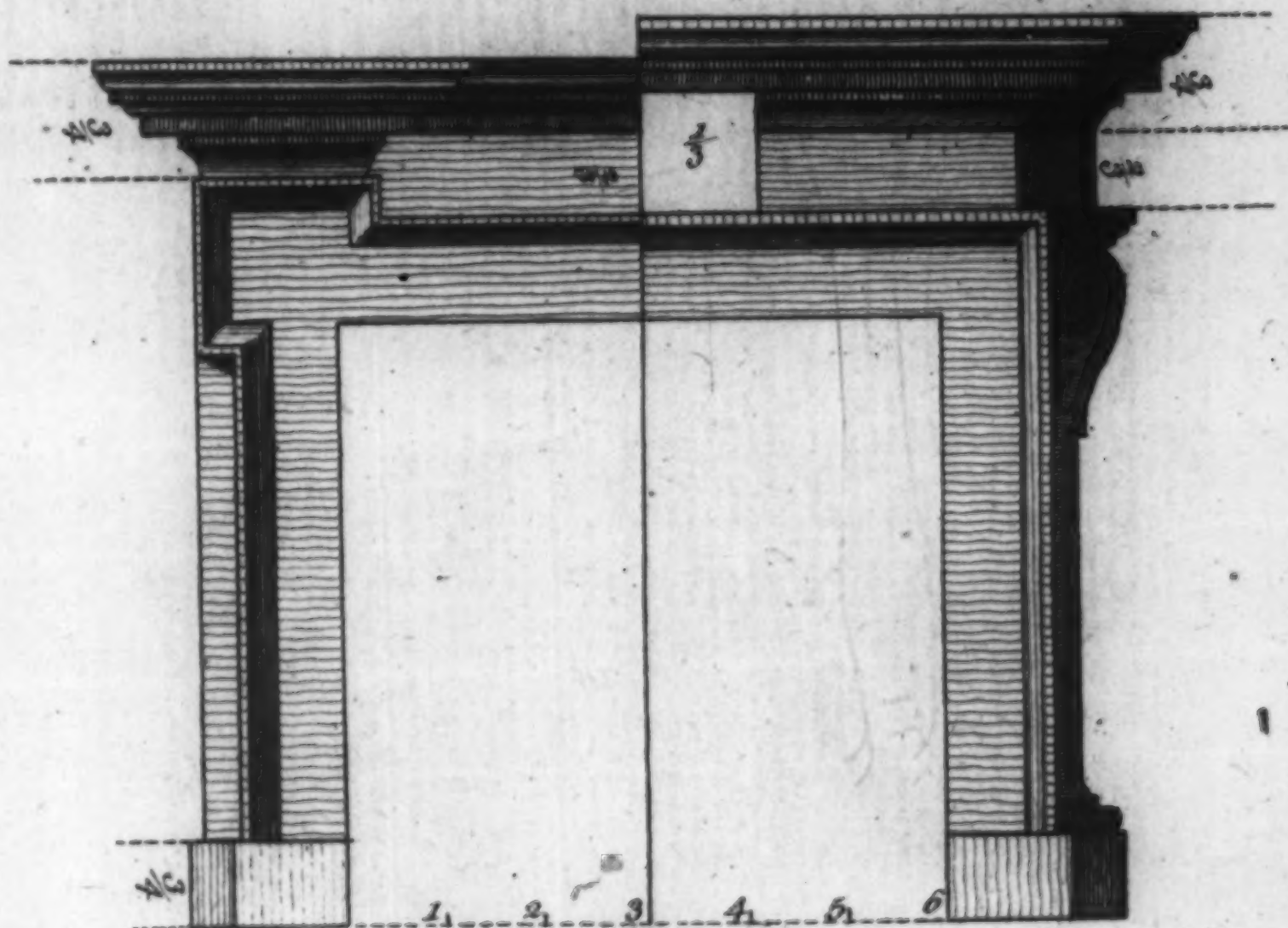
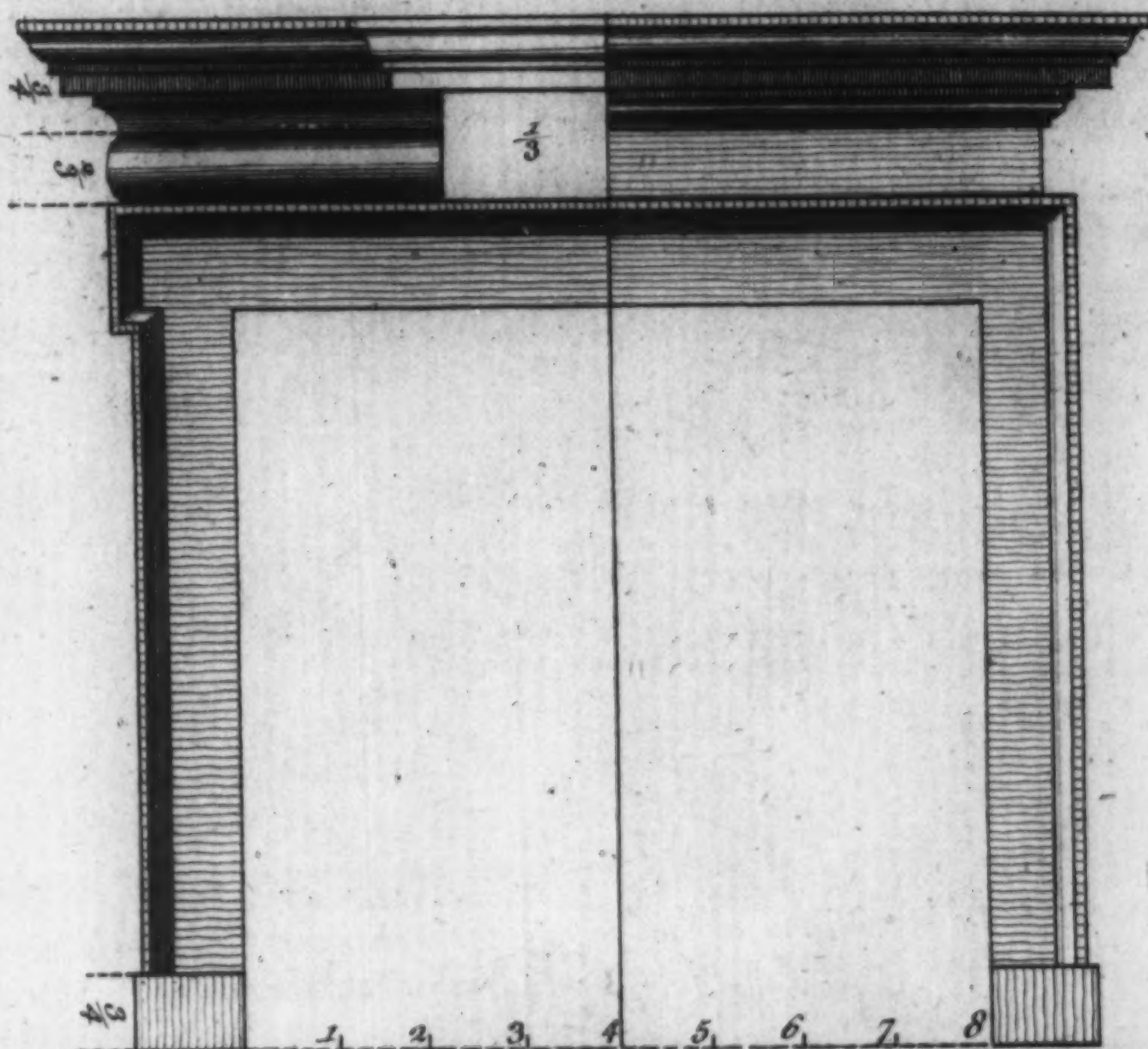
The Cornice is to be divided into as many Parts as are figured on the Plate, and these disposed to the Mouldings in Height and Projection as is there directed.

The Breadth of the Moulding on the Architrave should be equal to a fourth Part of the Architrave.

Note, In small Rooms the Architrave may be divided into three Parts, and two of these Parts given to the Frize, and two to the Cornice.

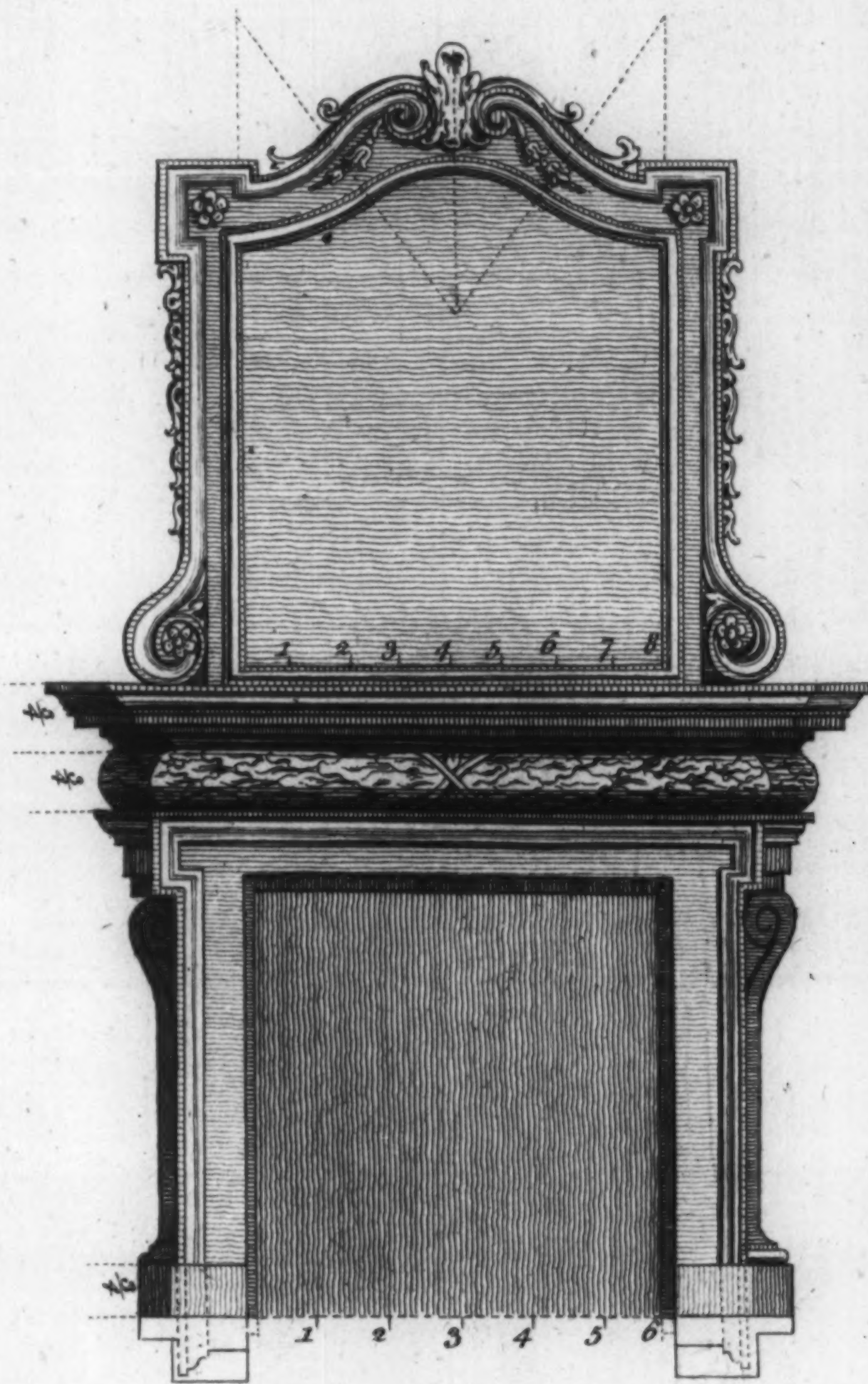
The Width or Opening of the Chimney must not be divided into less than six Parts, or more than eight for the Width of the Architrave.

The Width of Architrave Mouldings for Frames over Chimneys, must be a tenth Part of the Frame from Out to Out.



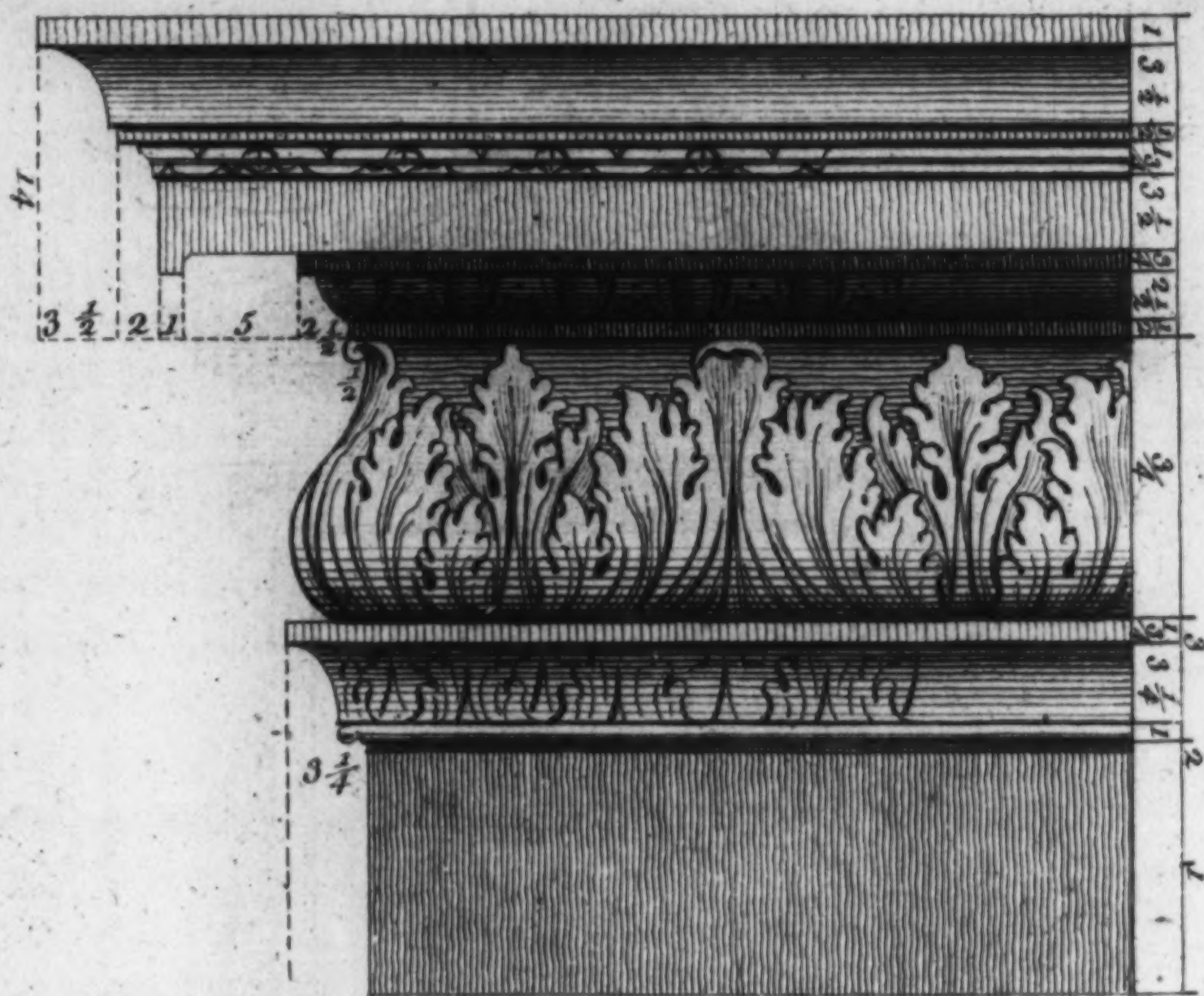




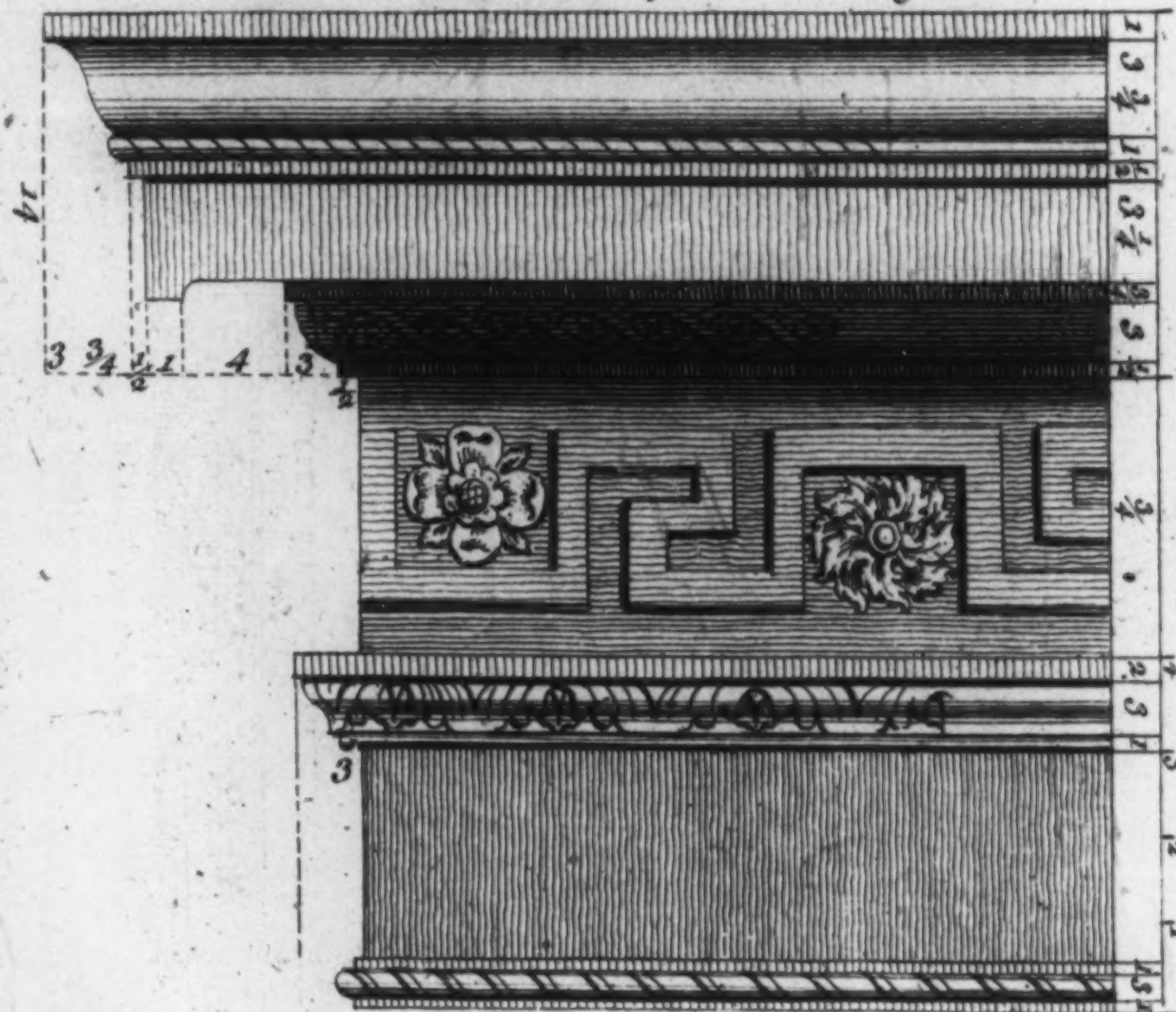


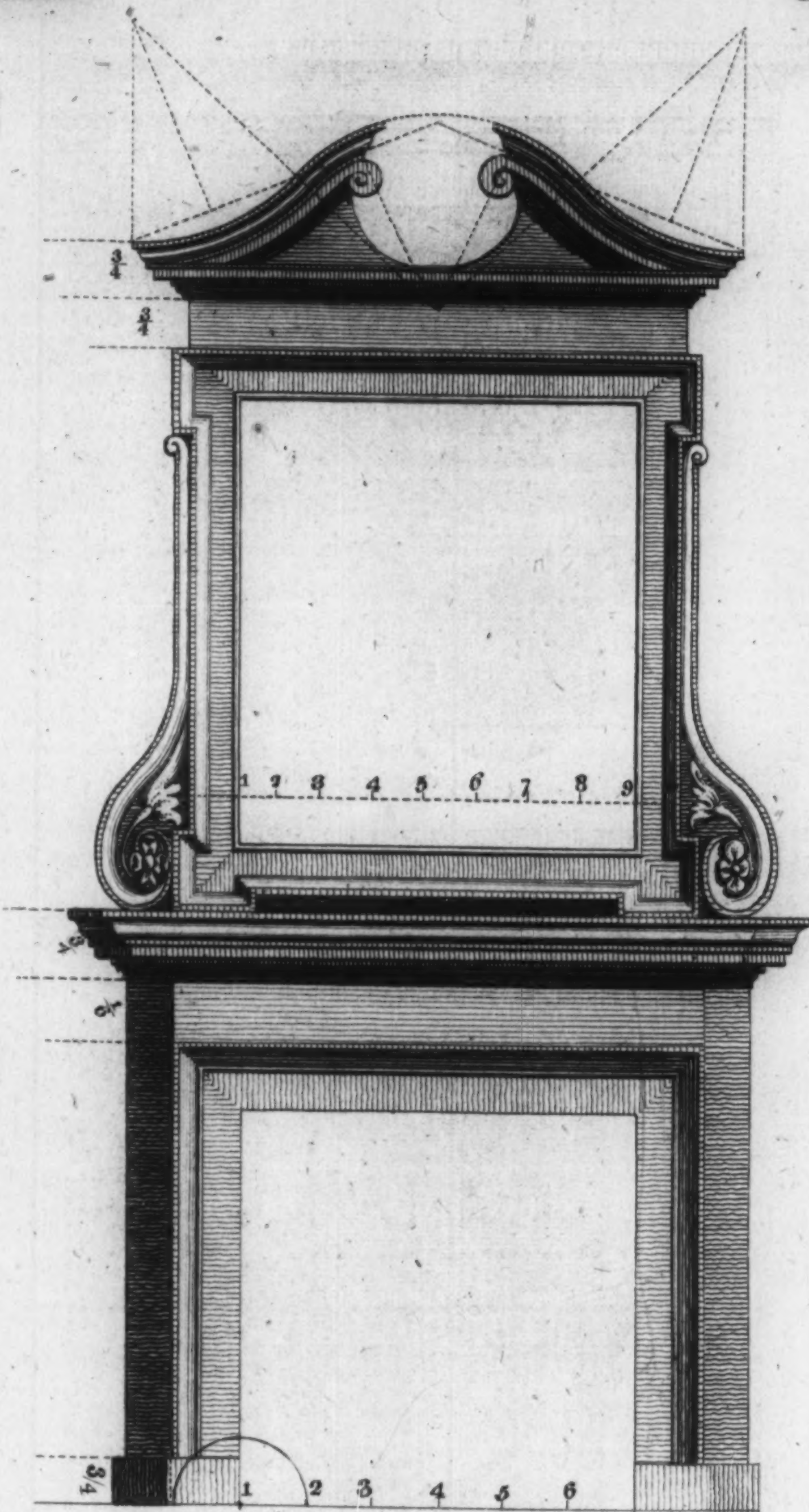


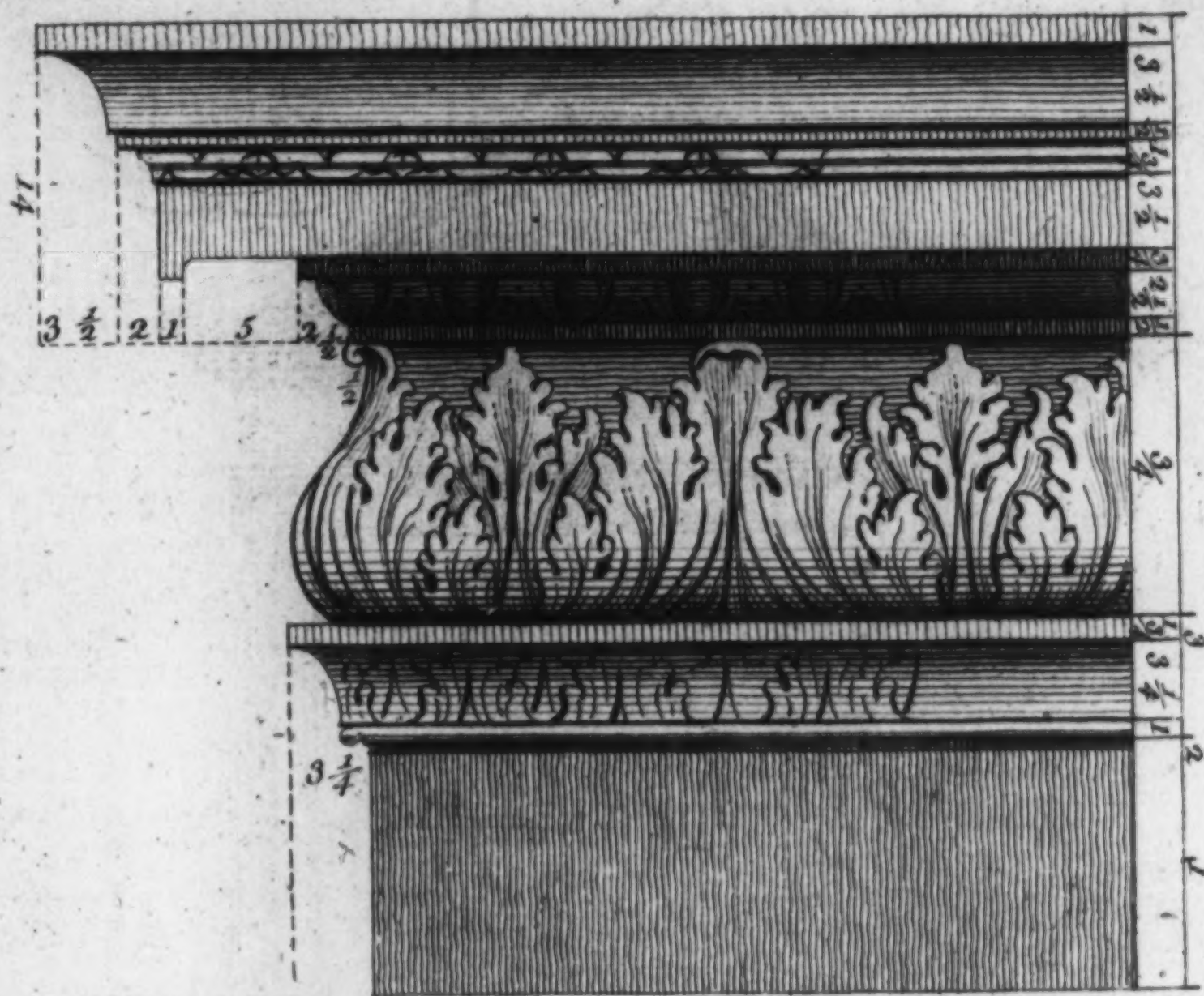




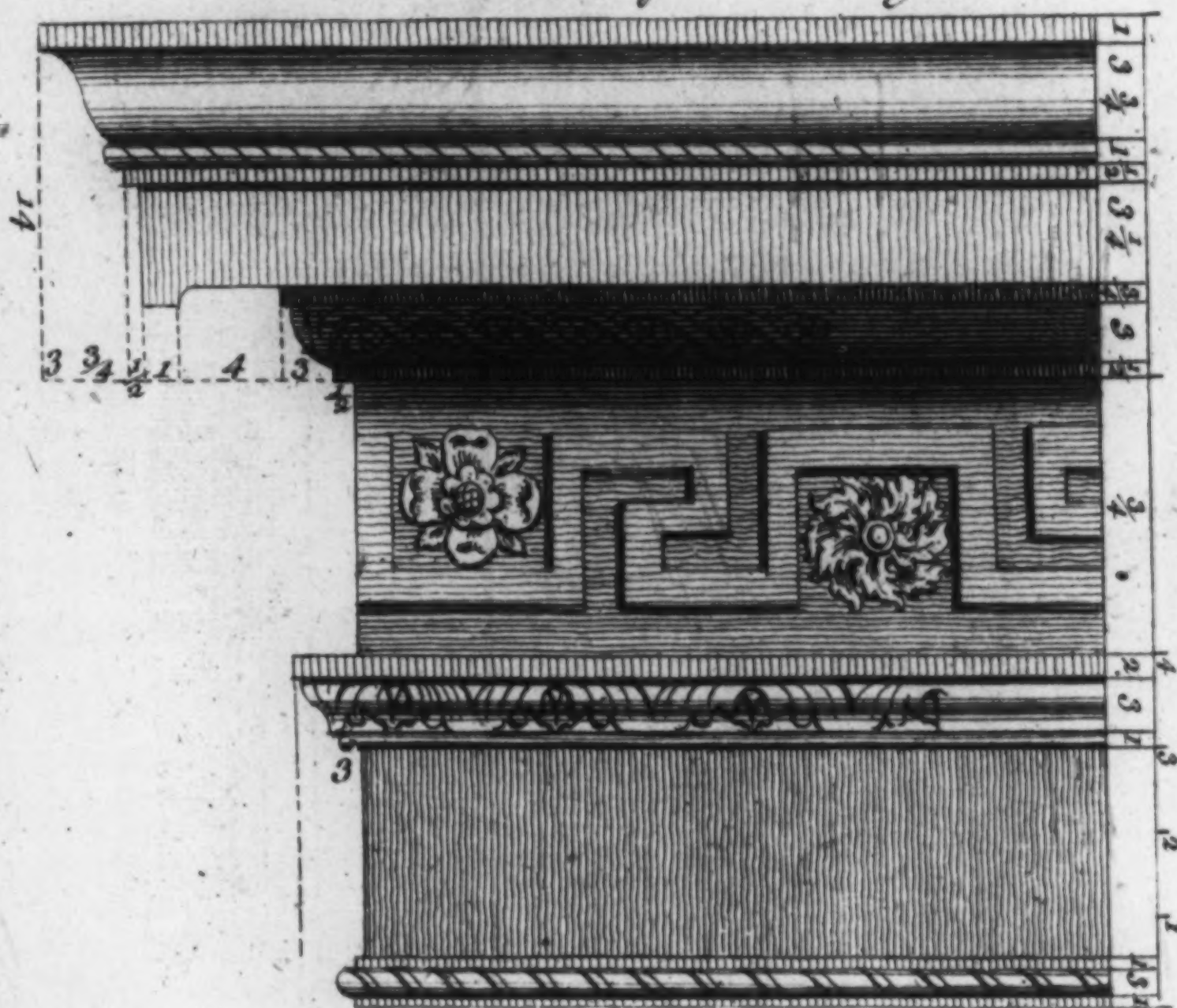
Two Entablatures for Chimneys.

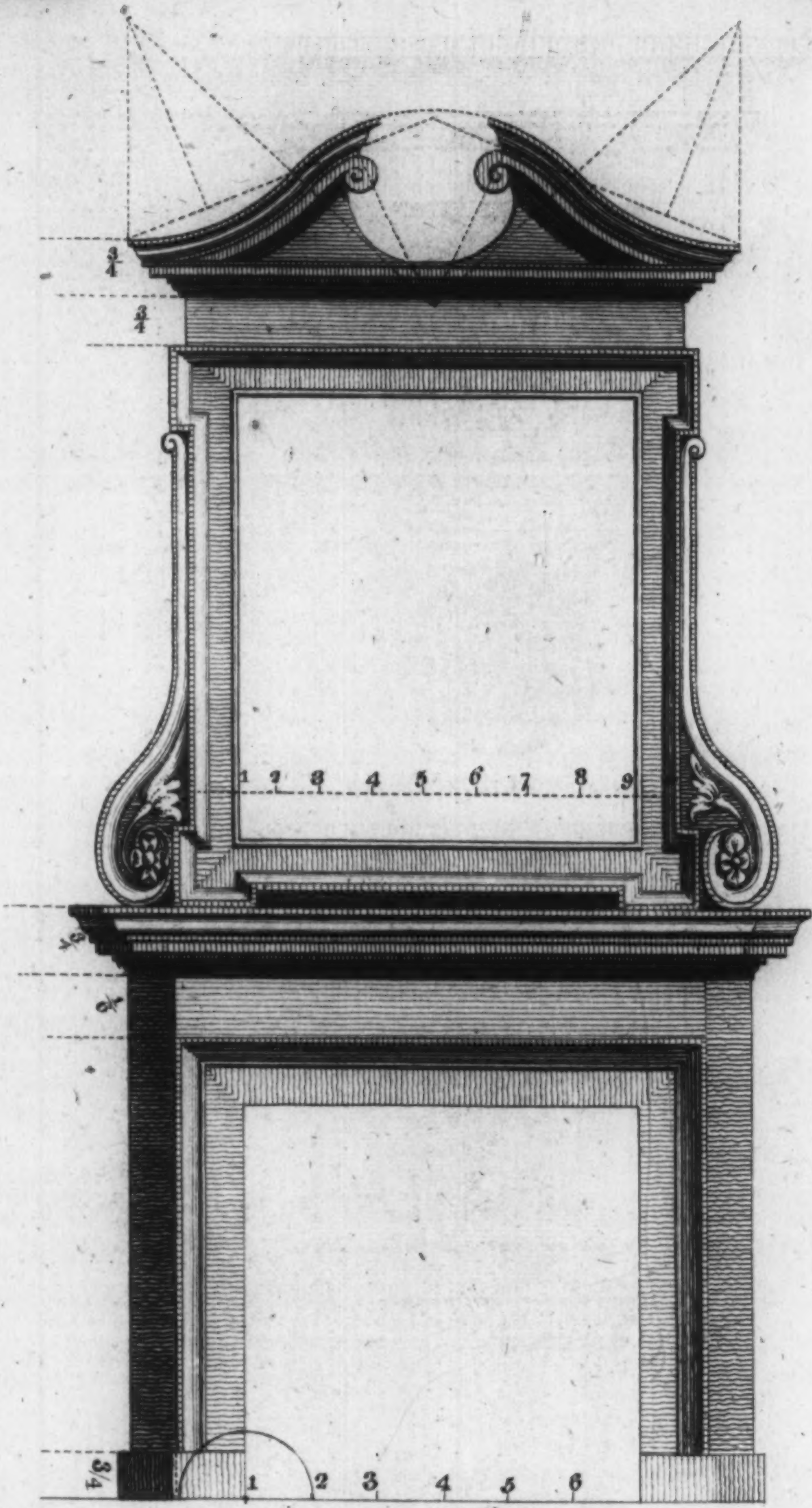






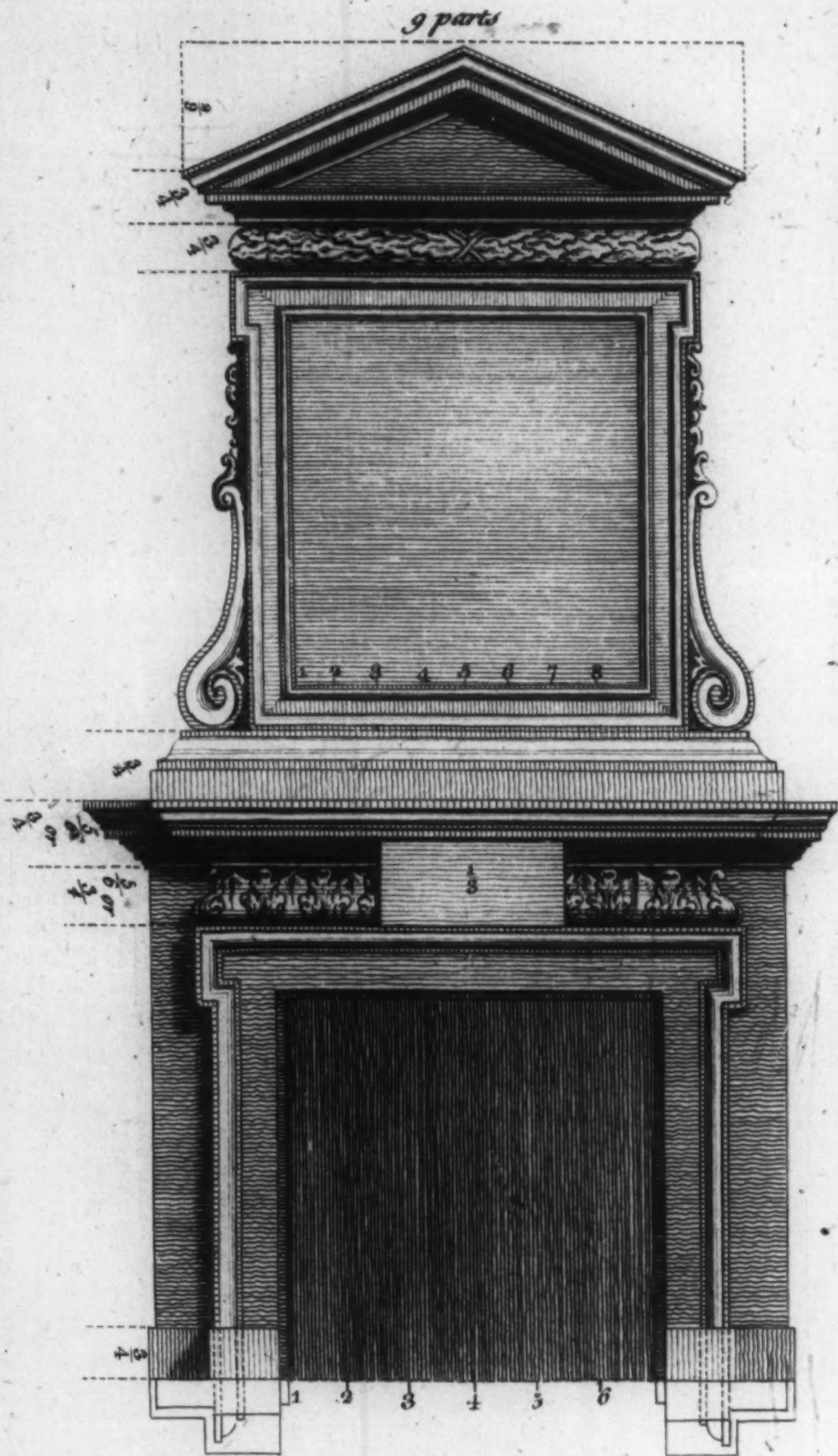
Two Entablatures for Chimneys.



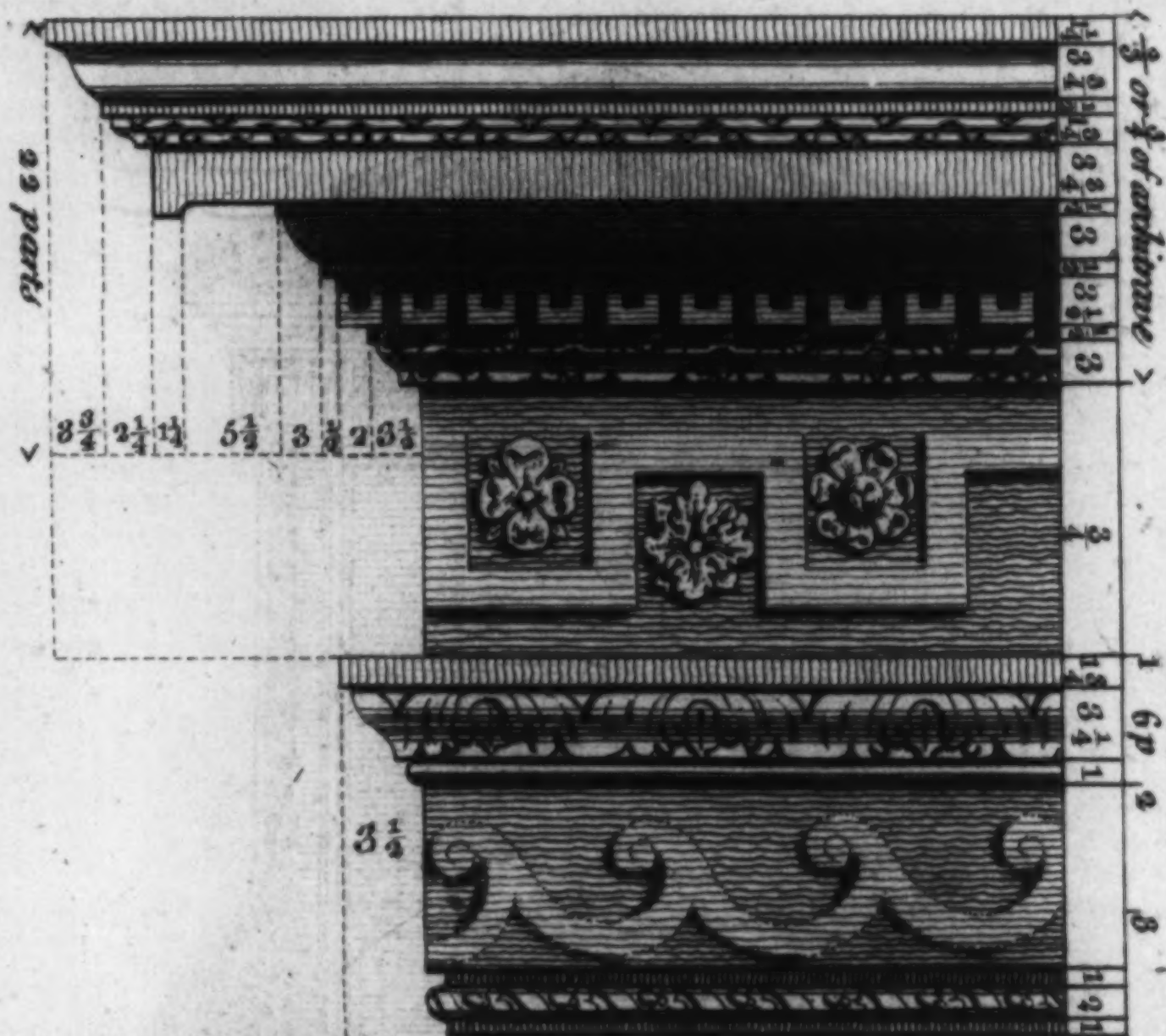




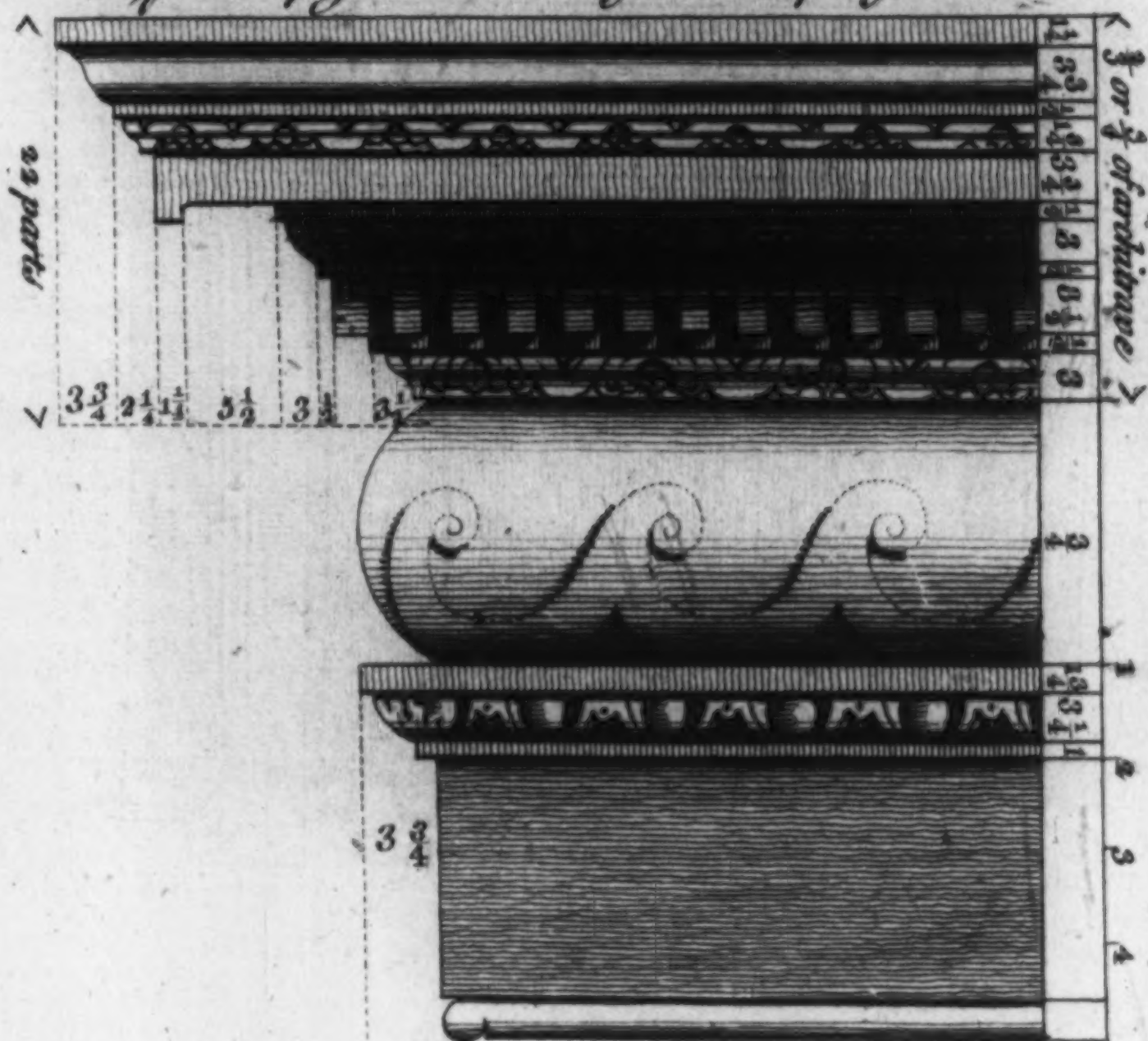


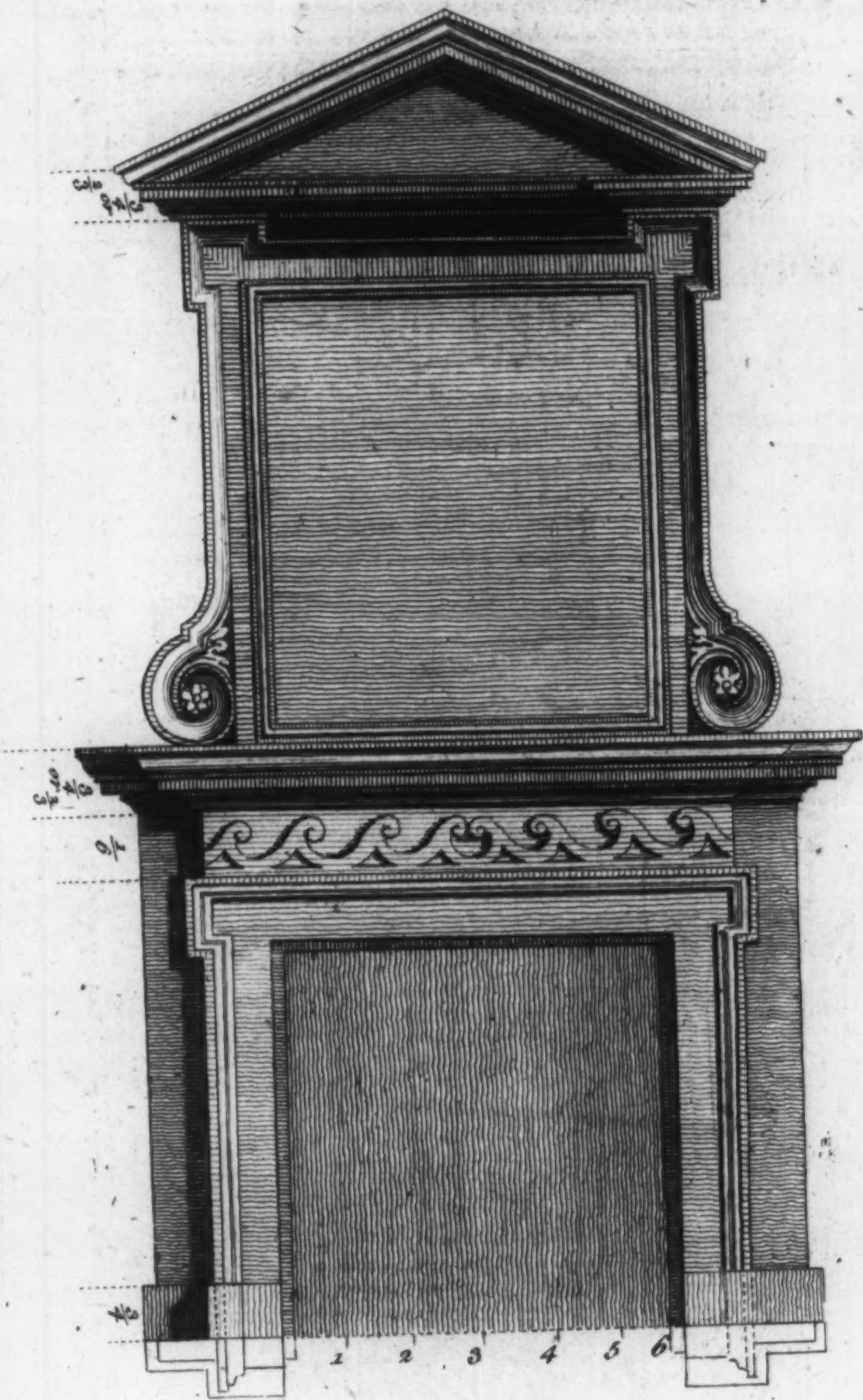




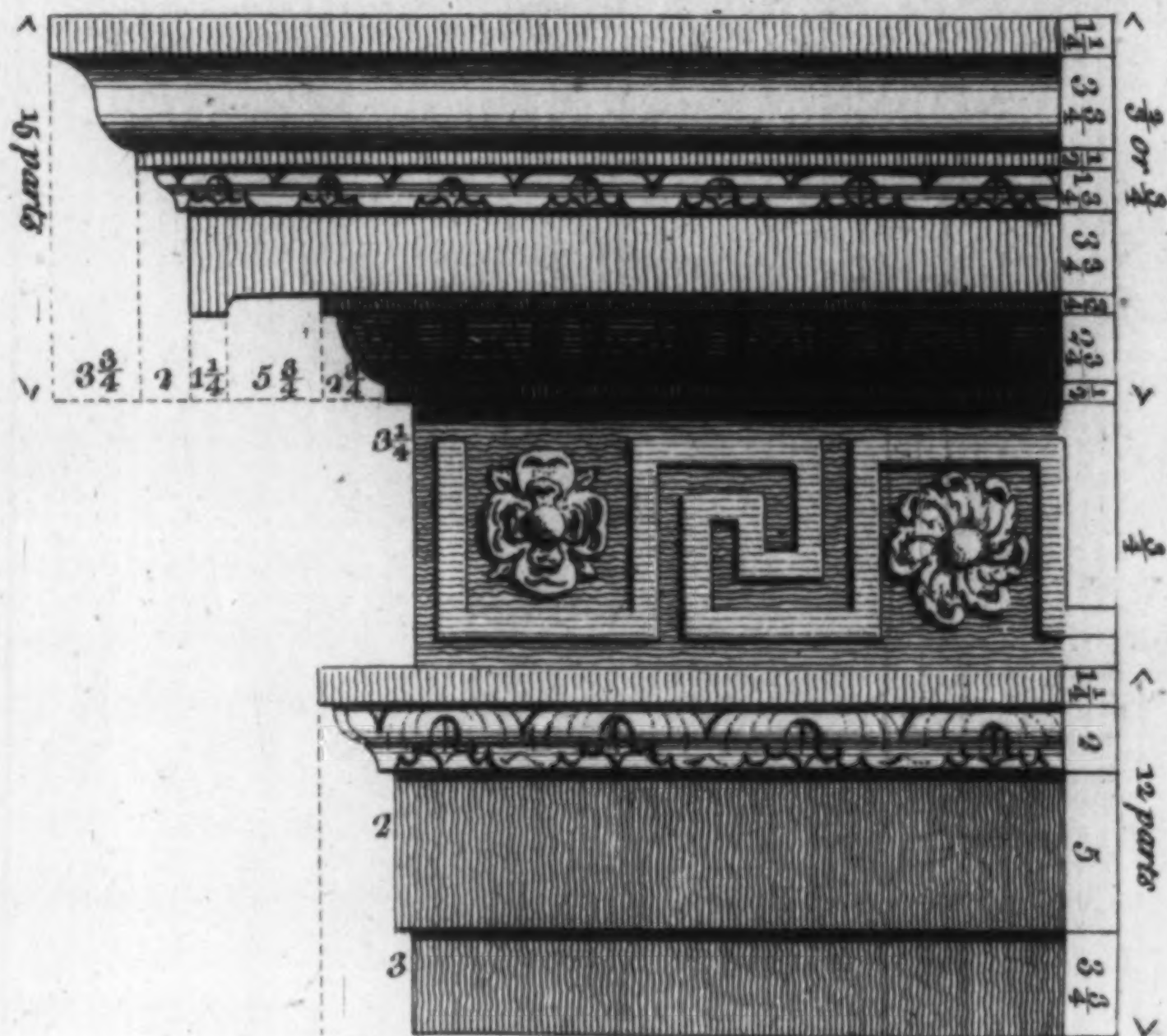
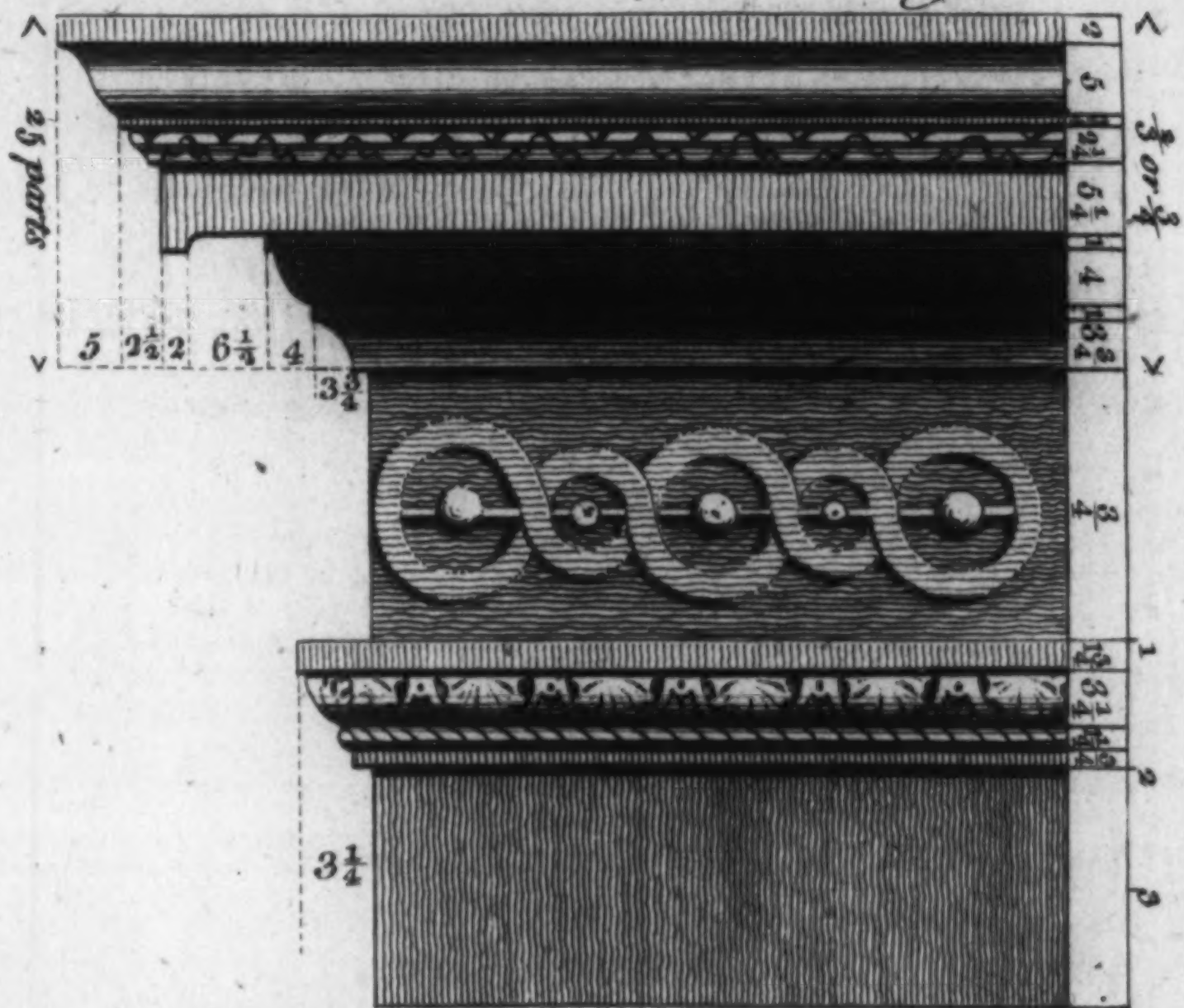


Two Entablatures for Chimneys, with all the parts figured in height and projection.









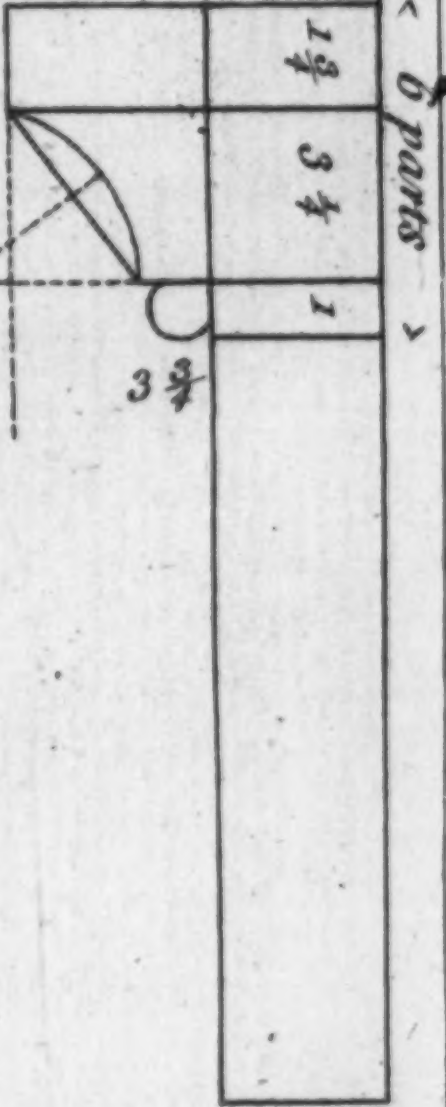
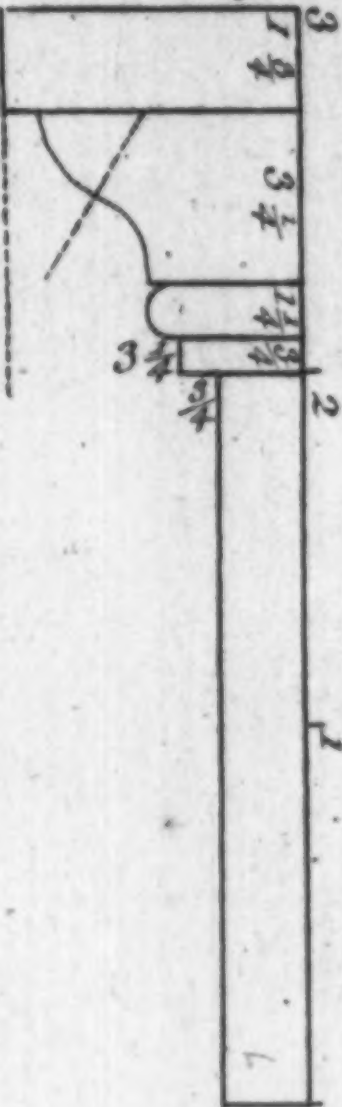
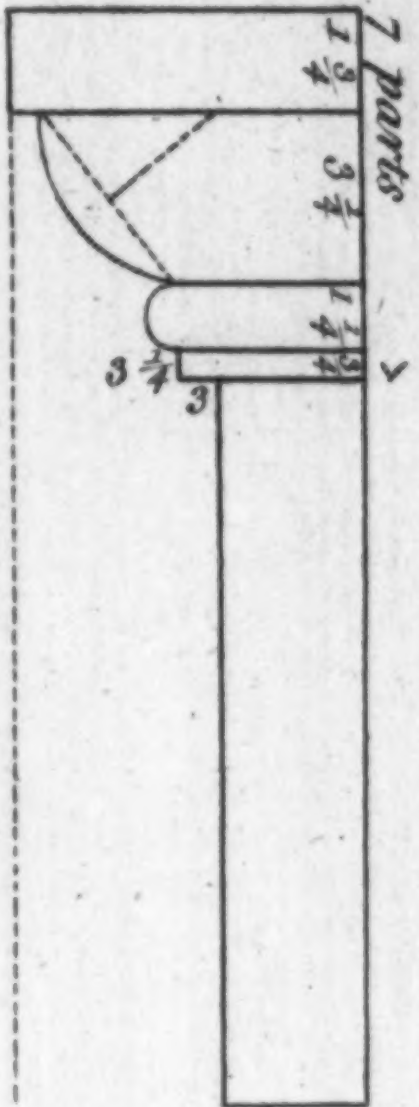




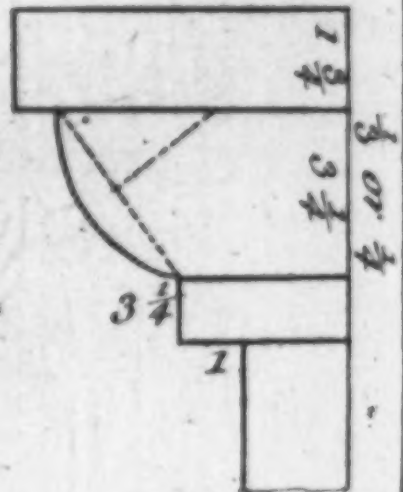
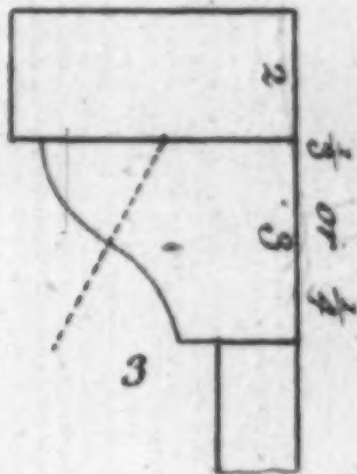
Architrave Mouldings for Frames over Chimneys at large



Architrave Mouldings to Chimneys at Large.

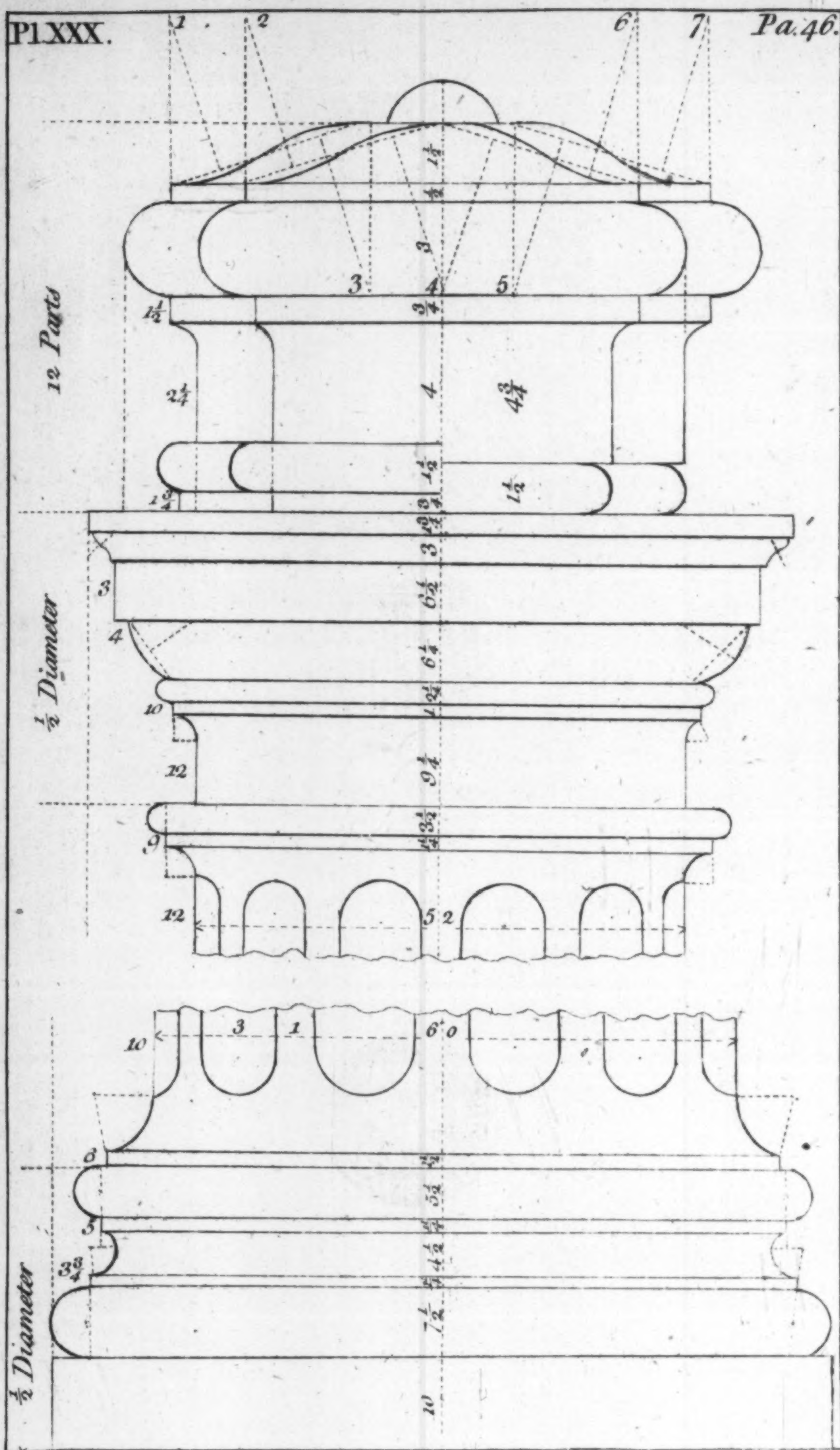


Part of Chimney or 8 ditto









Of the Newel and Hand-Rail.

The Order is Doric, the Height of the Newel's Base is half the Diameter, the Capital half the Diameter.

Divide the Diameter into sixty Parts, and dispose them to the Mouldings in Height and Projection as figured on the Plates.

The Centers for striking the Back will be plain by Inspection, they are marked, 1, 2, &c. to 7.

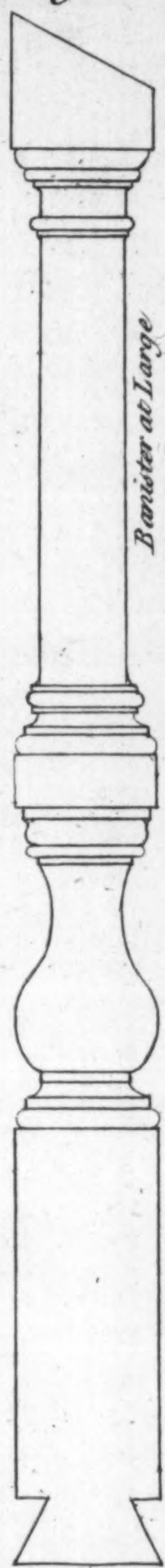
When the Newel is to be fluted, divide the Circumference into forty-eight Parts, and give three to a Flute, and one to a Fillet.

If the Banisters are to be fluted, divide the Circumference into thirty-two Parts, and give three to a Flute, and one to a Fillet.

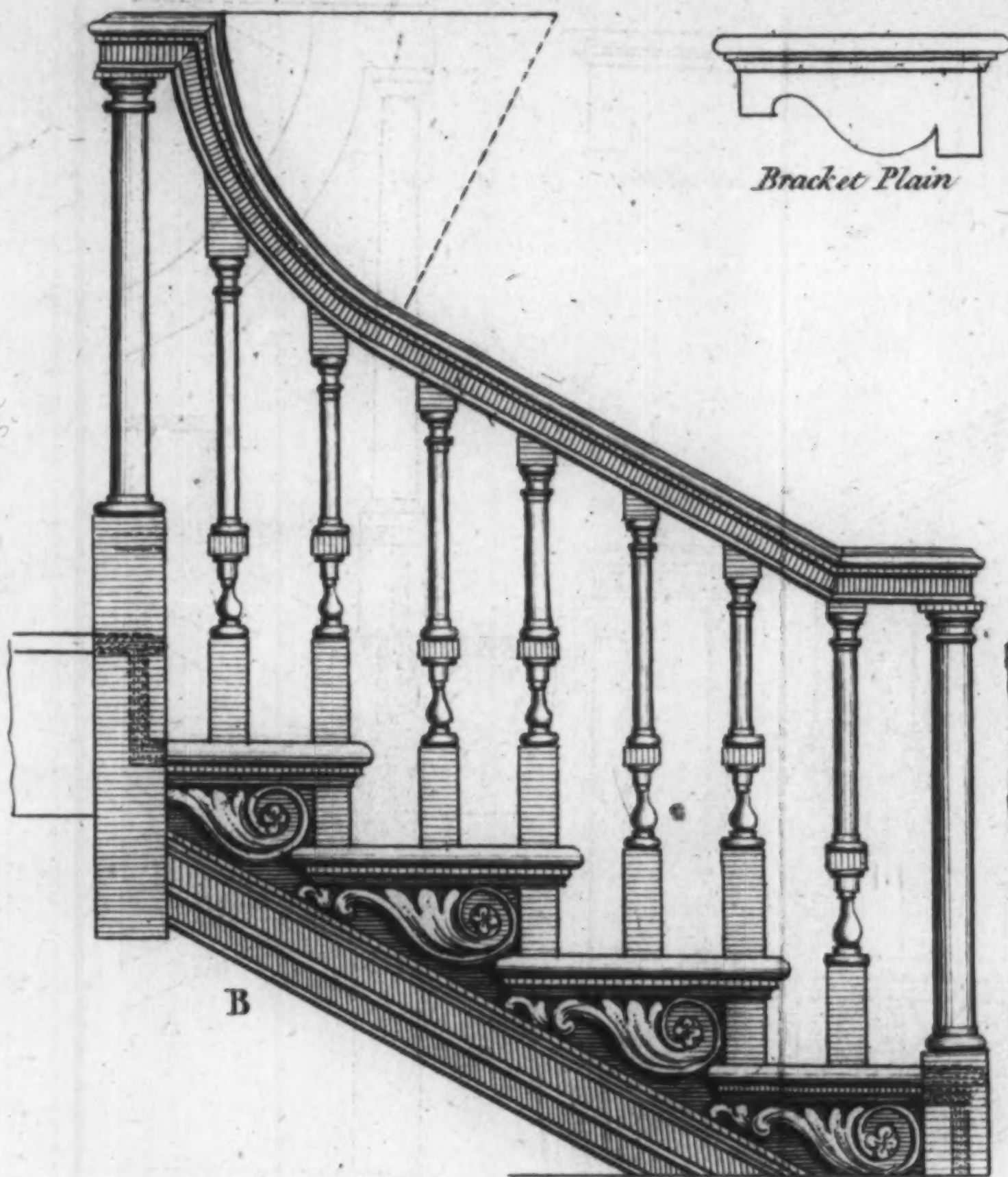
Plate 31 shews the Section and Elevation of Stairs, with the Method of fixing the Strings, Rails, and Newels for the Steps; also the Method of striking the Ramps, Knees, &c. in a plain and easy Manner, with the Well-hole, and Plan of the Stairs, the Height of the Rails, Banisters, Newels, &c. which, by Inspection, will appear so plain as to need no further Explanation.

Plate 32 is a Plan of the Hand-Rail, and circular Cap, shewing the Mitre of the Rail to the circular Cap on the Newel, and a Cap for Iron Hand Rail, &c.

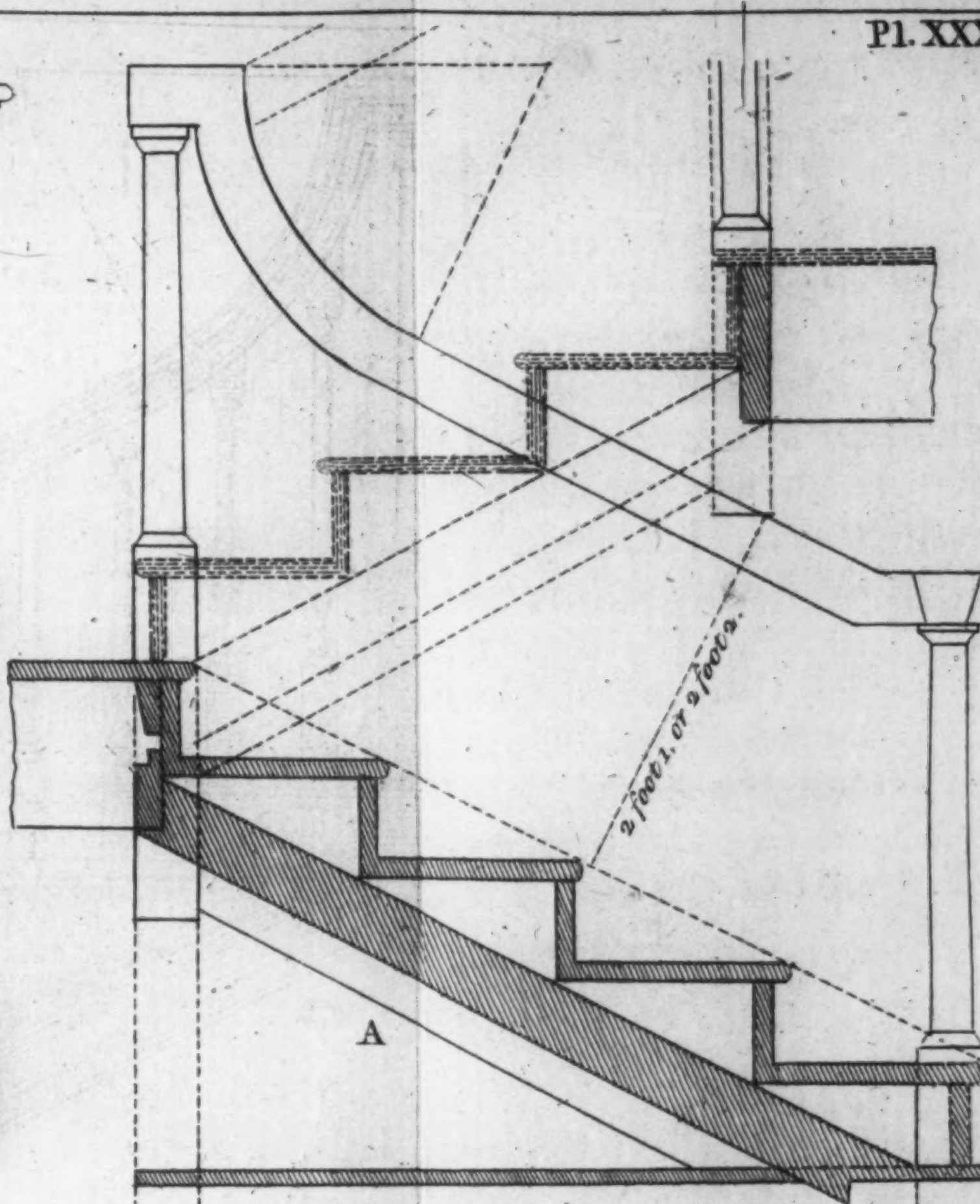
A the Section of the Stairs, *B* the Elevation.



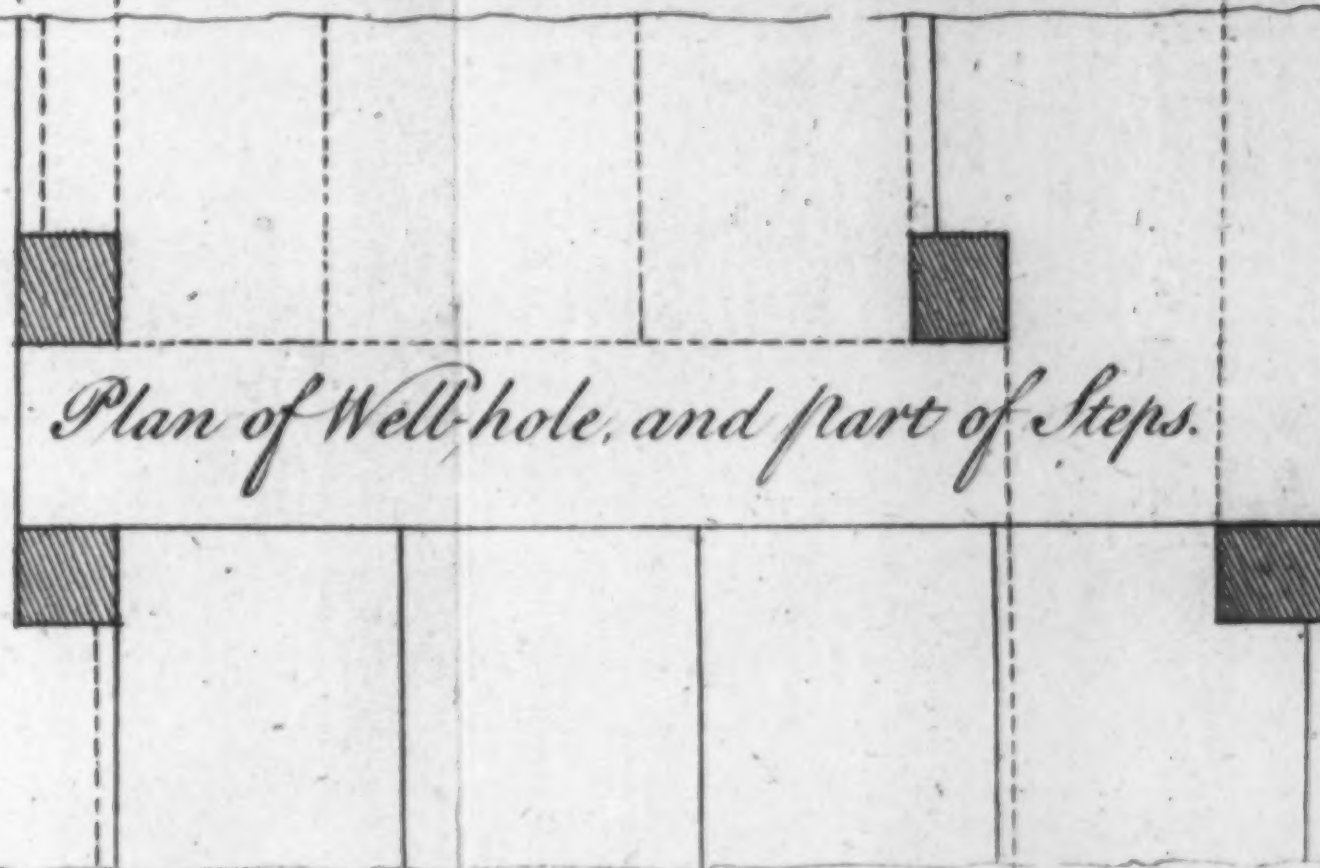
Baluster at Large



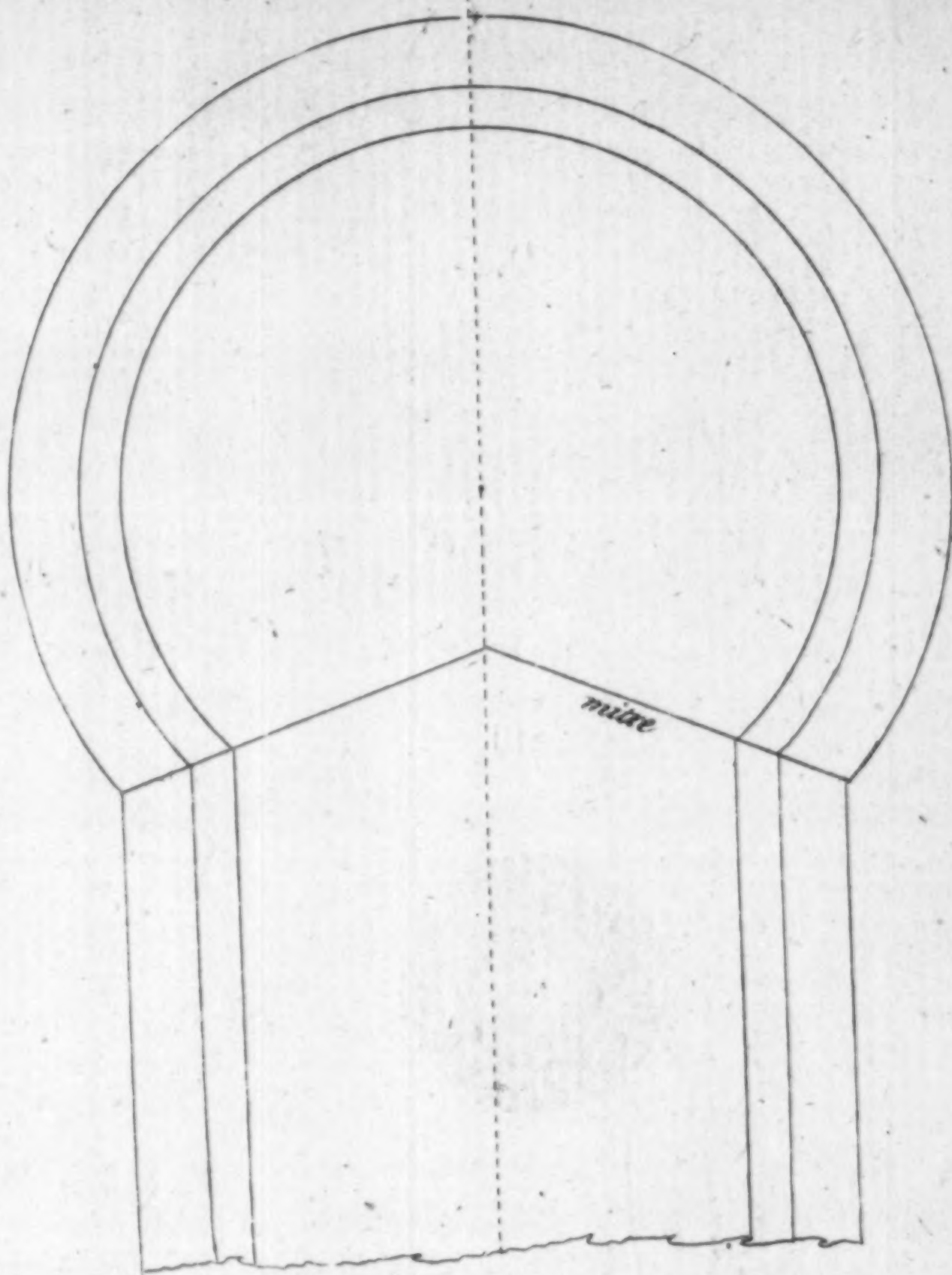
Bracket Plain



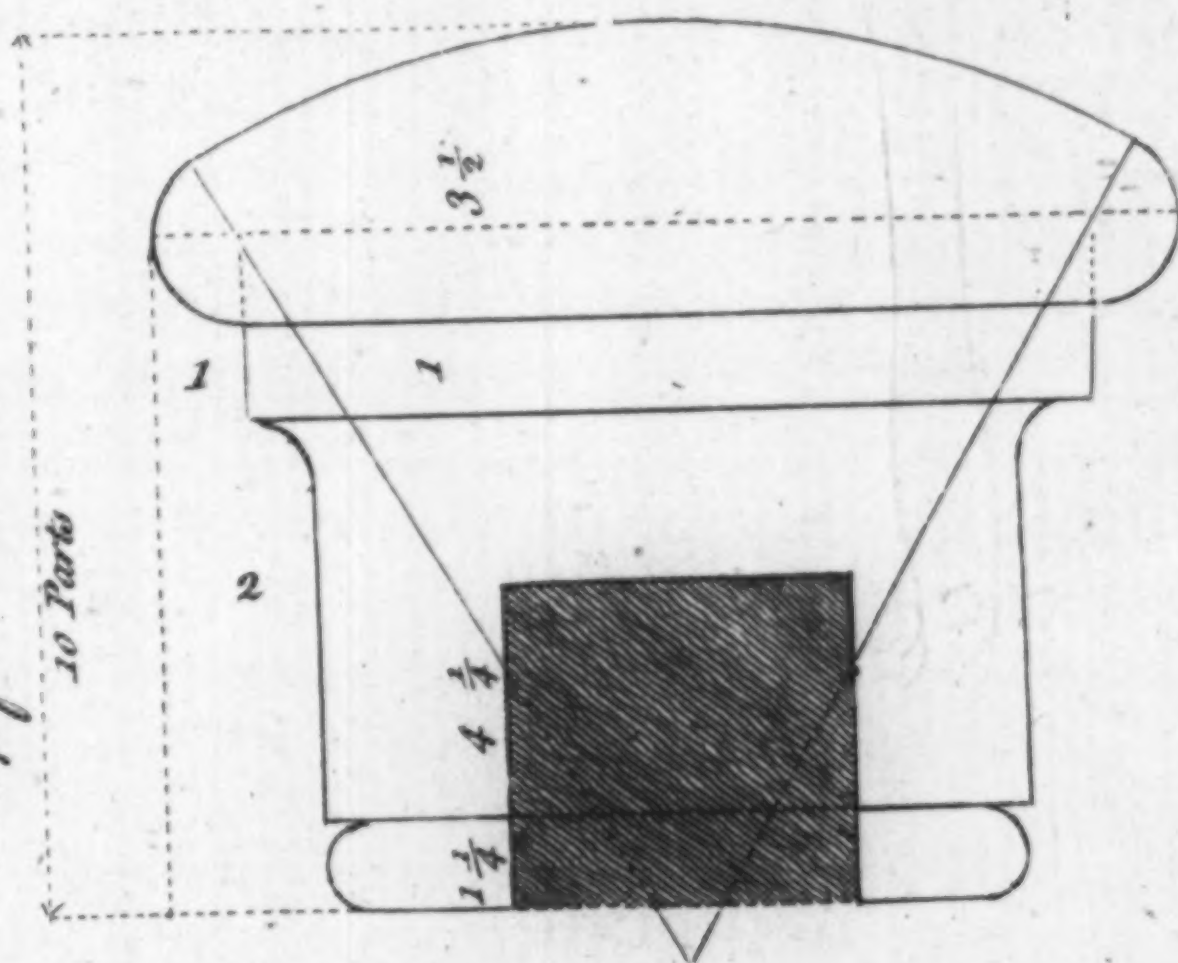
Plan of Well-hole, and part of Steps.



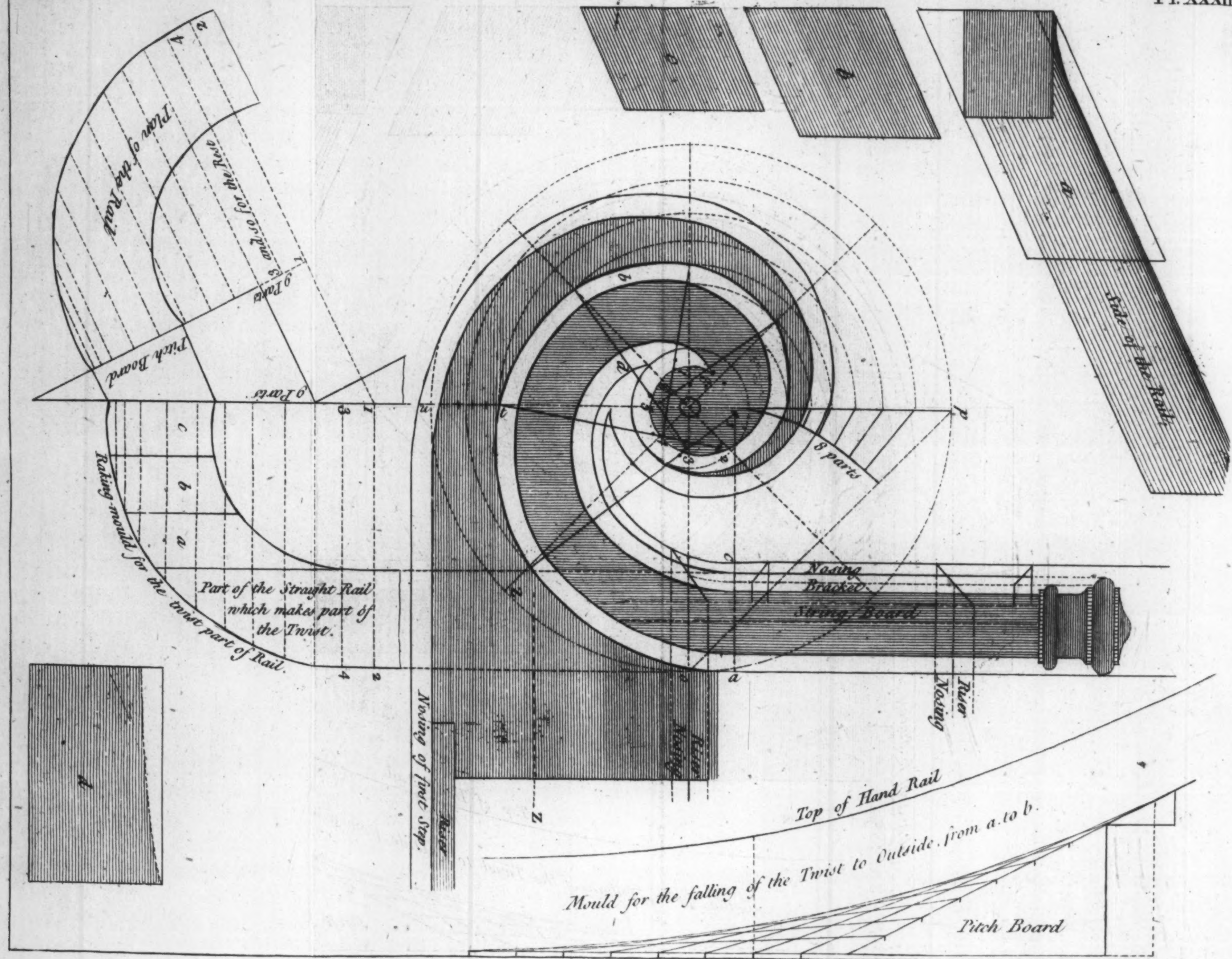
Plan of the Hand-rail and Circular Cap on the Newel.



Cap for Iron Rail.







*To draw the Plan and Scrole of a twist Rail for
a Staircase.*

a b is the Length of the twisted Part of the Rail, to draw which describe a Circle equal to the Breadth of two Steps, and taking the Projection of the Astragal of the Hand-rail, describe a small Circle in the Center of the Eye.

Then taking half the Width of the Hand-rail, set on without that small Circle, and describe a Circle, which will be the Breadth of the Eye. Next draw the Line *o p*, and set one Foot of the Compass at *o*, and draw the Arch Line 8, which will be the diminishing Scale, and is explained by the dotted Lines turned to each eighth Part, which diminishing brings the Rail round to the Eye.

To find the Centers for drawing each eighth Part, set one Foot of the Compass at *o*, and extend the other to the Center of the Eye, and describe an Arch with that Distance at *1*; then set the Foot at *z*, and with the same Radius cut the former Arch at *1*, which will be the Center of the first eighth Part, *a z*.

Now setting one Foot at *z*, extend the other to the Center of the Eye, and with that Radius describe an Arch at *2*, and having set the Foot at *1*, cut this Arch at *2*, which will be a Center for the second eighth Part, and so on all round for the rest.

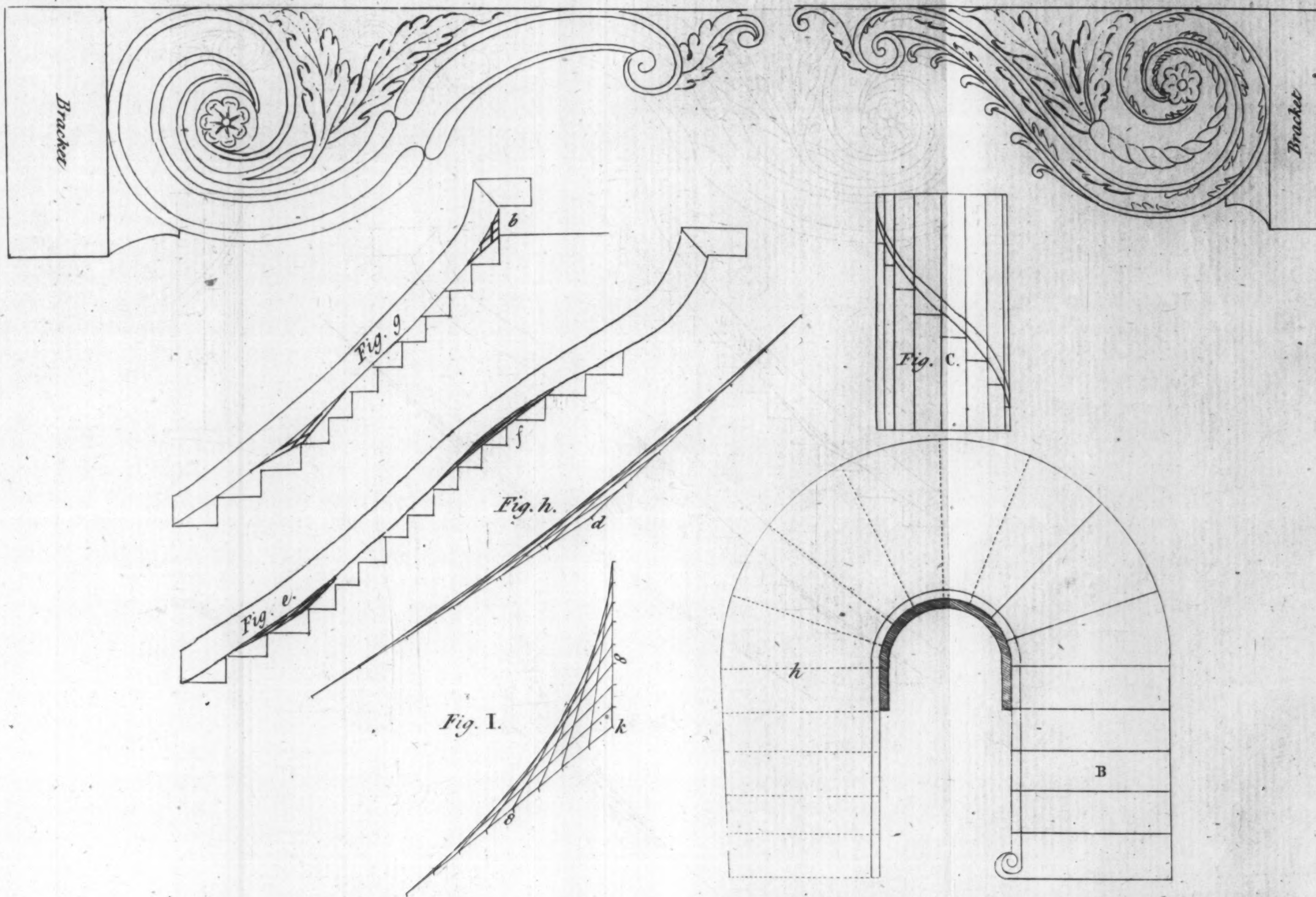
The black Dots without the Centers are for striking the Front of the Riser, and Nose of the Steps. Their Distance from the Center is $\frac{1}{3}$ of *t u*.

Plate 34 shews the Method of glewing Hand-Rails for circular Stairs.

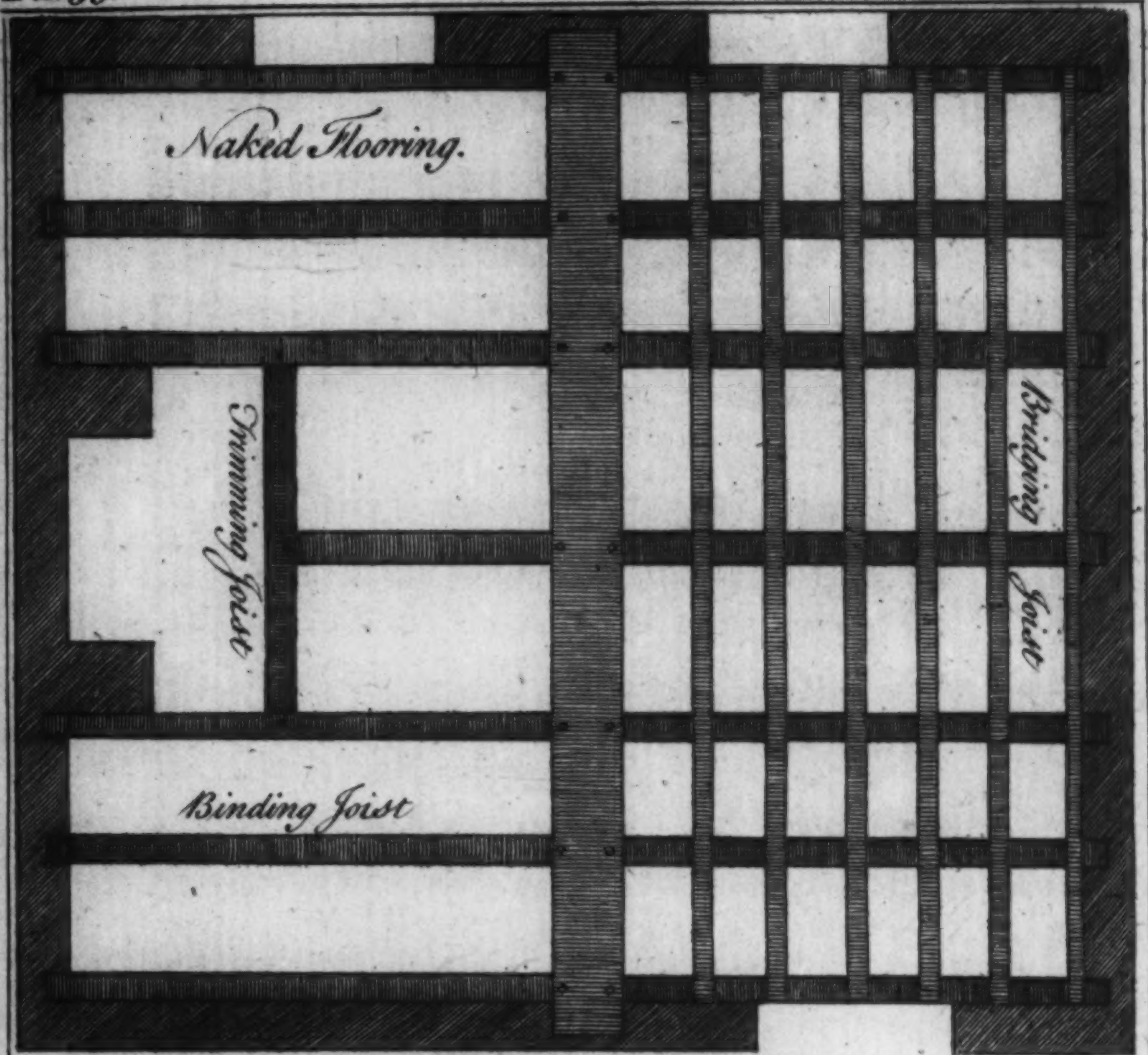
The best Way is to make a Templet to the Well-hole of the Stairs, as the shadowed Part in the Plan *B*; then draw the Rise and Thread of the Steps on the Templet as *C*, which will be the under Part of the Rail touching the Nose of the Steps. The Meeting of the streight Part of the Rail with the twisted Part forms an obtuse Angle at *f* and *e*, Fig. *e*, which must be traced by the Intersection of right Lines, to make an easy Ramp, as fig. *b*, or as *f e* in Fig. *e*, which is the Side of the Rail or Mould to cut the Thickness by to be glewed on the Templet, and when a sufficient Number are glewed together for the Thickness of the Rail on the Templet, the Rail will come off ready squared. Then, supposing the Landing of the Stairs to be at *b*, the Ramp at Top will be in the twisted Part of the Rail, as Fig. *g*; the Line of the under Part of the Rail makes an obtuse Angle with the Rise of the Step or Ramp, as at *k* in Fig. *i*; or at *b* in Fig. *g*. which must be traced by right Lines for the Ramp, as Fig. *i*, which is the under Side of the Ramp.

This is a safe and sure Way for Rails of this Kind.

The Steps under the Side of the Rail, Fig. *e* and *g*, are the circular ones of the Plan *B* stretched out at Length.



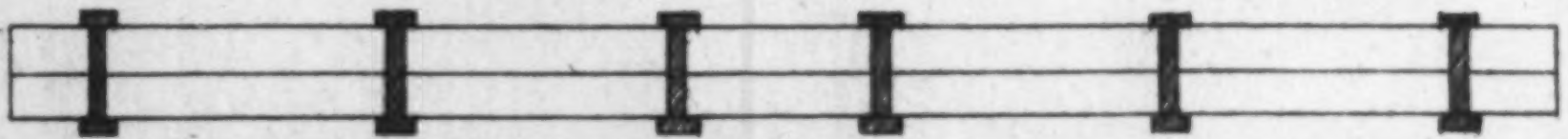




Section of a Girder.



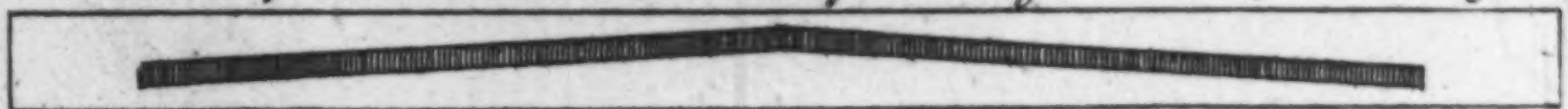
Binding Joist on the Bridging Joist



Trussing of Girders, the Truss to be of dry Oak about 4 inches Square.



Put Iron plates at the Butments of the Trusses to keep them tight



To find the Lengths, and Backing of Hips, and Framing Roofs in Ledgment, either square or bevel. Plate 36.

To find the Length of the Hips turn the Base-lines of the Hips *a d* to meet the Base-lines of the principal Rafters *a b*, *a b*; then from the Point of the Rafter to *b*, is the Length of the Hip either square or bevel. This is a sure Rule.

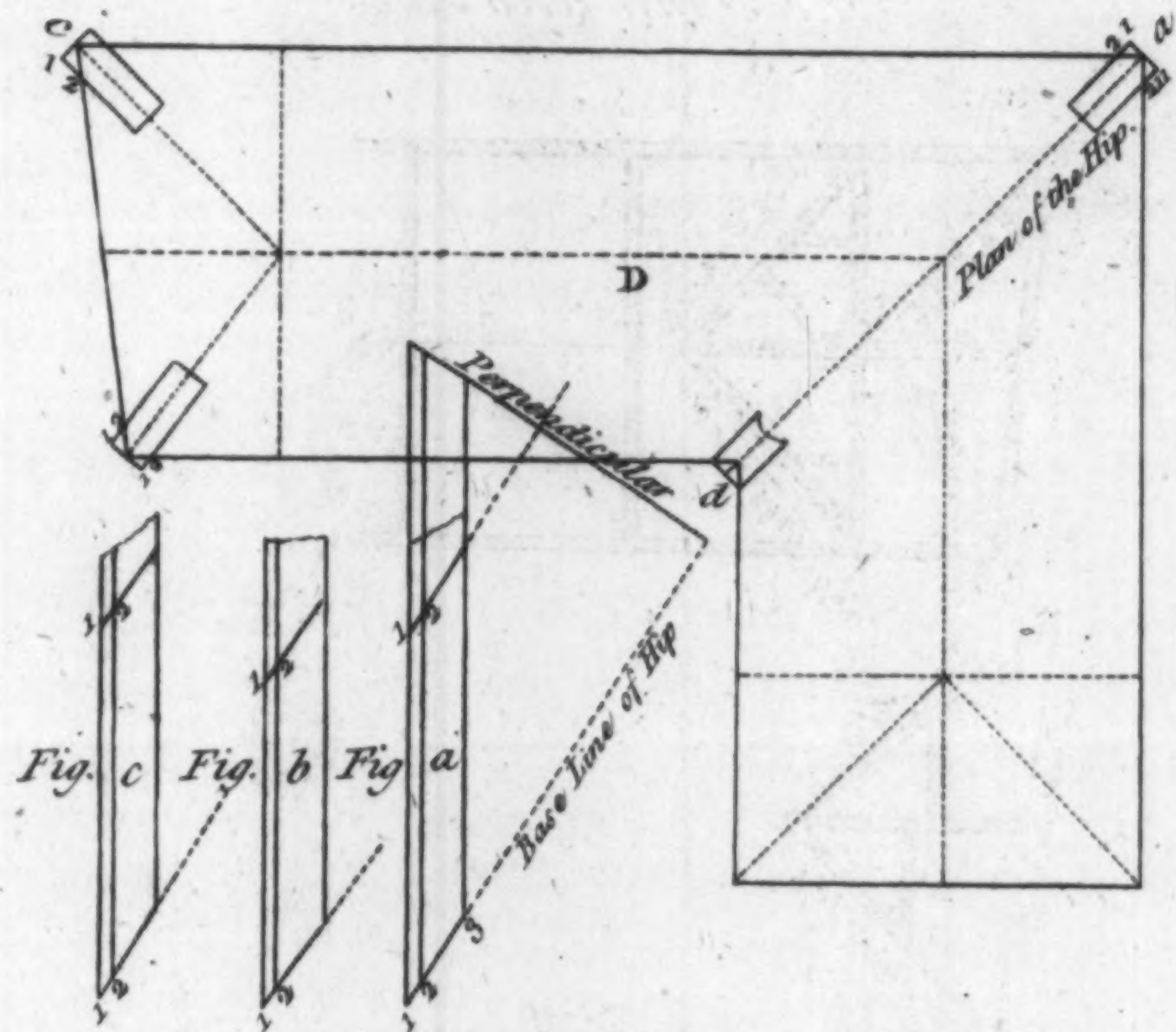
In Plan D is shewn the Method of backing the Hip either square or bevel. Fig. *a* is the Mould for the Foot of the Hip, and backing, to stand at the Angle *a*. Fig. *a* represents a Piece of the Thickness of the Hip, which is cut to the Splay or Pitch of the Hip at the Foot, as 1, 2, 3; take off the same Splay with a Bevel, and put it on a little higher, as 1, 2; take also the Distance at the Angle *a* in the Plain of the Hip, as 1, 2, and set it on the Splay of the Foot, Fig. *a*, as 1, 2, and 1, 2 on the Splay above; then a Line drawn through the Points -2, 2, shews the Wood to come off in the Backing. The same Rule must be observed in all curve-lined Hips.

To find the Length of Curve-lined Hips, and the Manner of applying the Mould for the Backing. Plate 36.

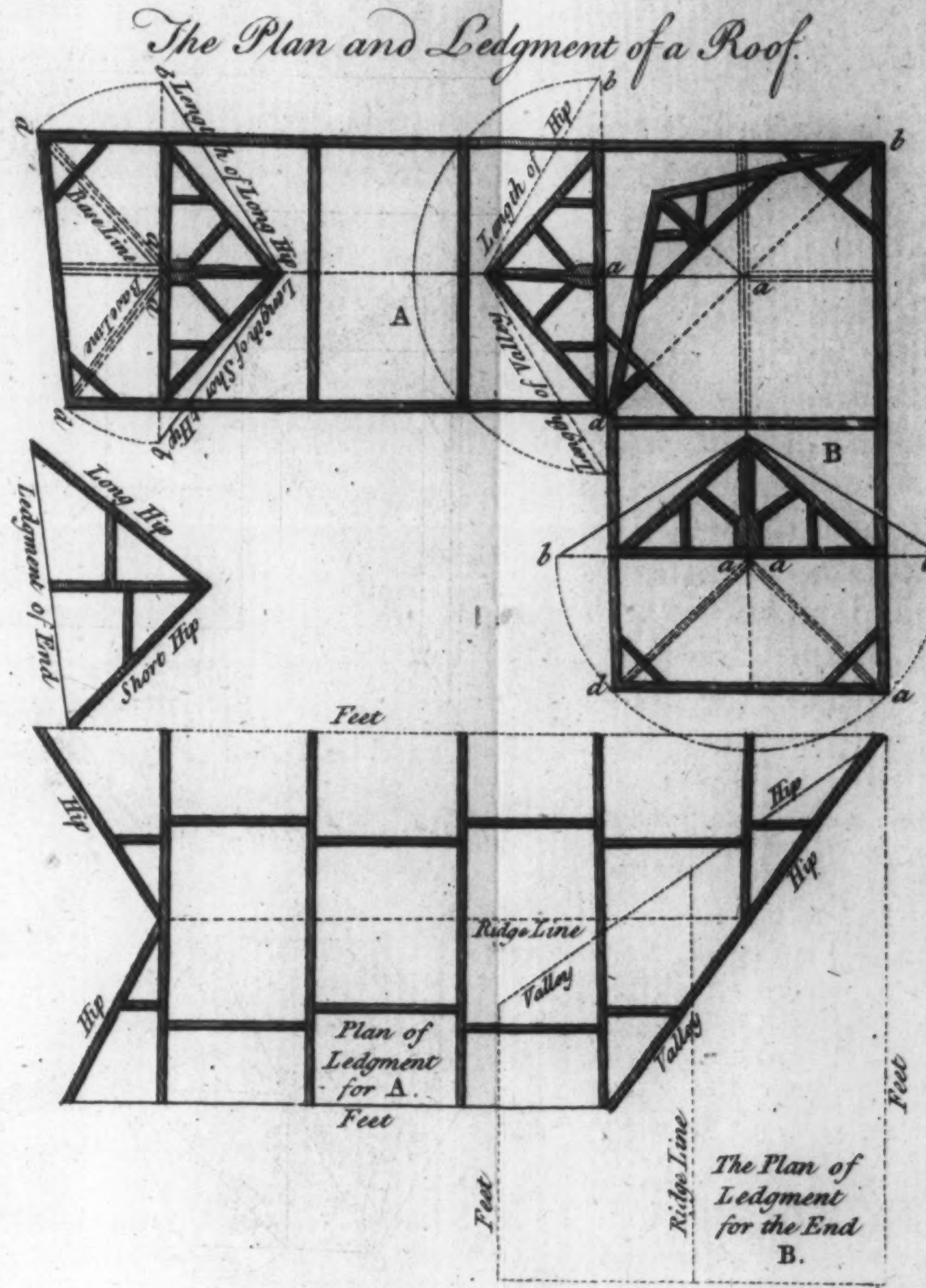
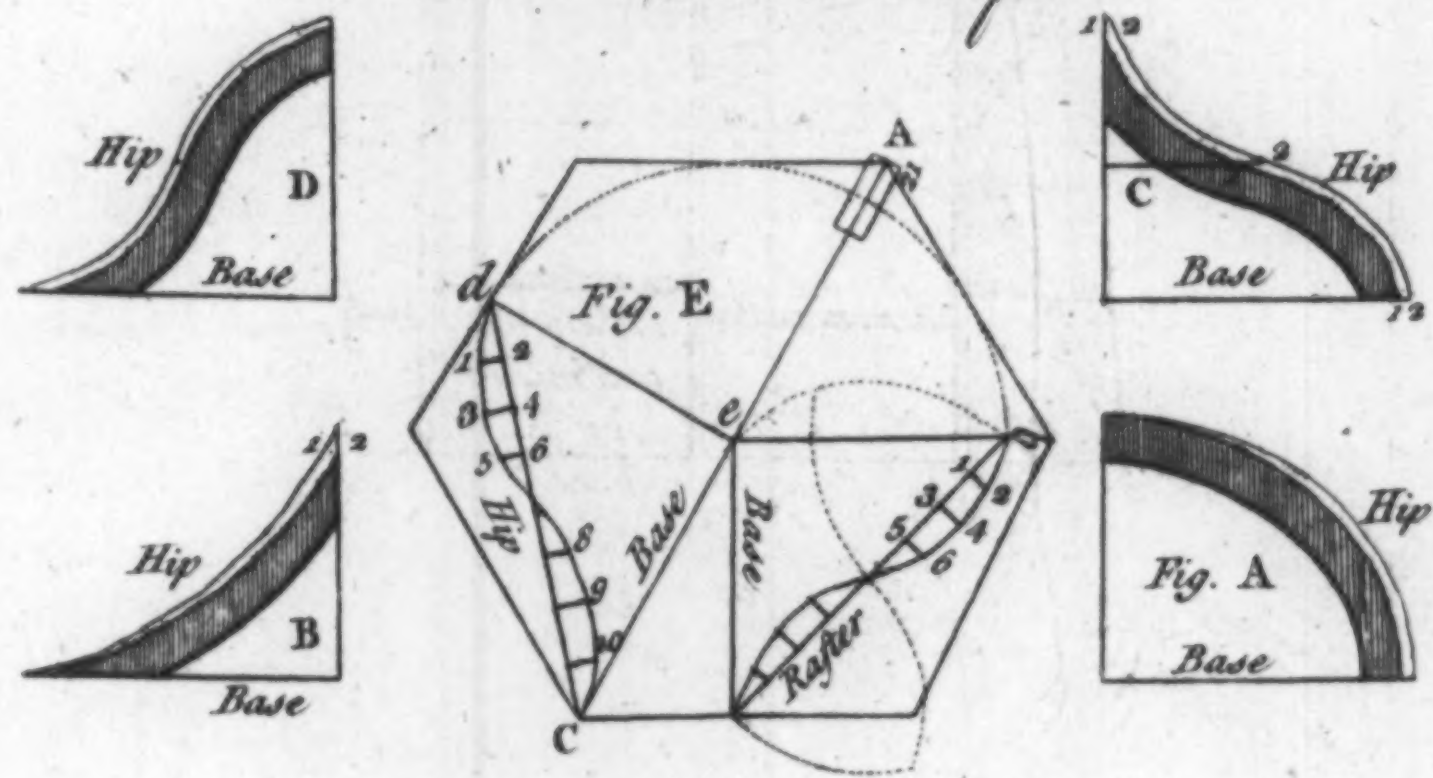
Fig. E is a Plan to be roofed in.

First find the Length of the Rafter, which is agreed on to be the Height of the Roof or Dome; then draw the Chord Line ab , and describe the Ogee or Curves of the Rafter; next divide the Chord Line ab into equal Parts, as 1, 3, 5, &c. and draw the Lines 1, 2, 3, 4, 5, 6; take afterwards the perpendicular Height of the Rafter eb , and make the perpendicular Height of the Hip cd ; then draw the Chord Line of the Hip cd , and take the Parts 1, 2, 3, 4, 5, 6 from the Rafter, and set them at equal Parts on the Chord Line of the Hip, as 1, 2, 3, &c. and so for the rest, which will give the Curve of the Hip, when traced through the Points 1, 3, 5, 8, 9, 10. Take also the Distance 1, 2, from the Plan of the Hip at A, and set it on the Hip C or D, at Bottom, Middle, and Top, parallel with the Base-line.

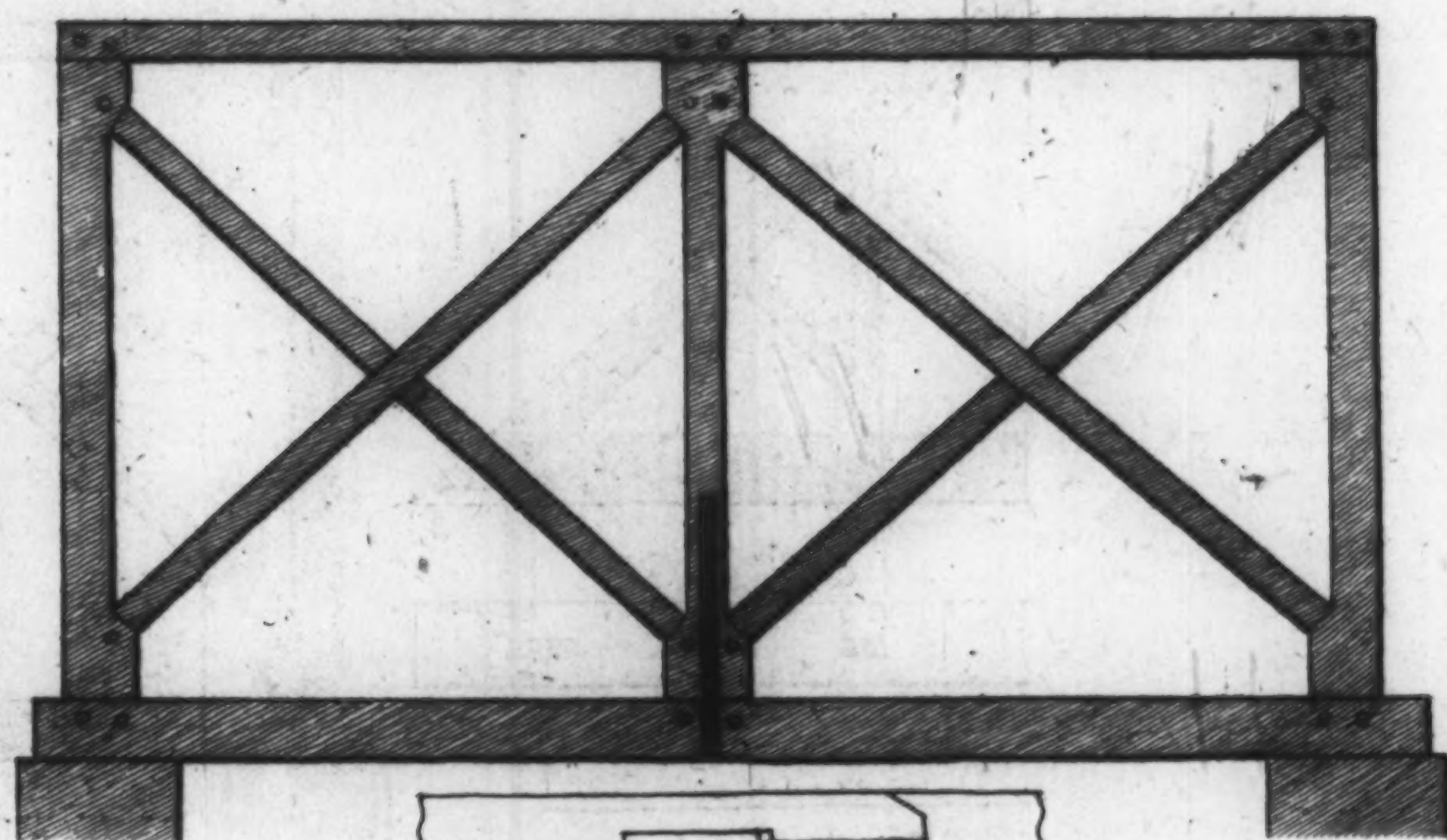
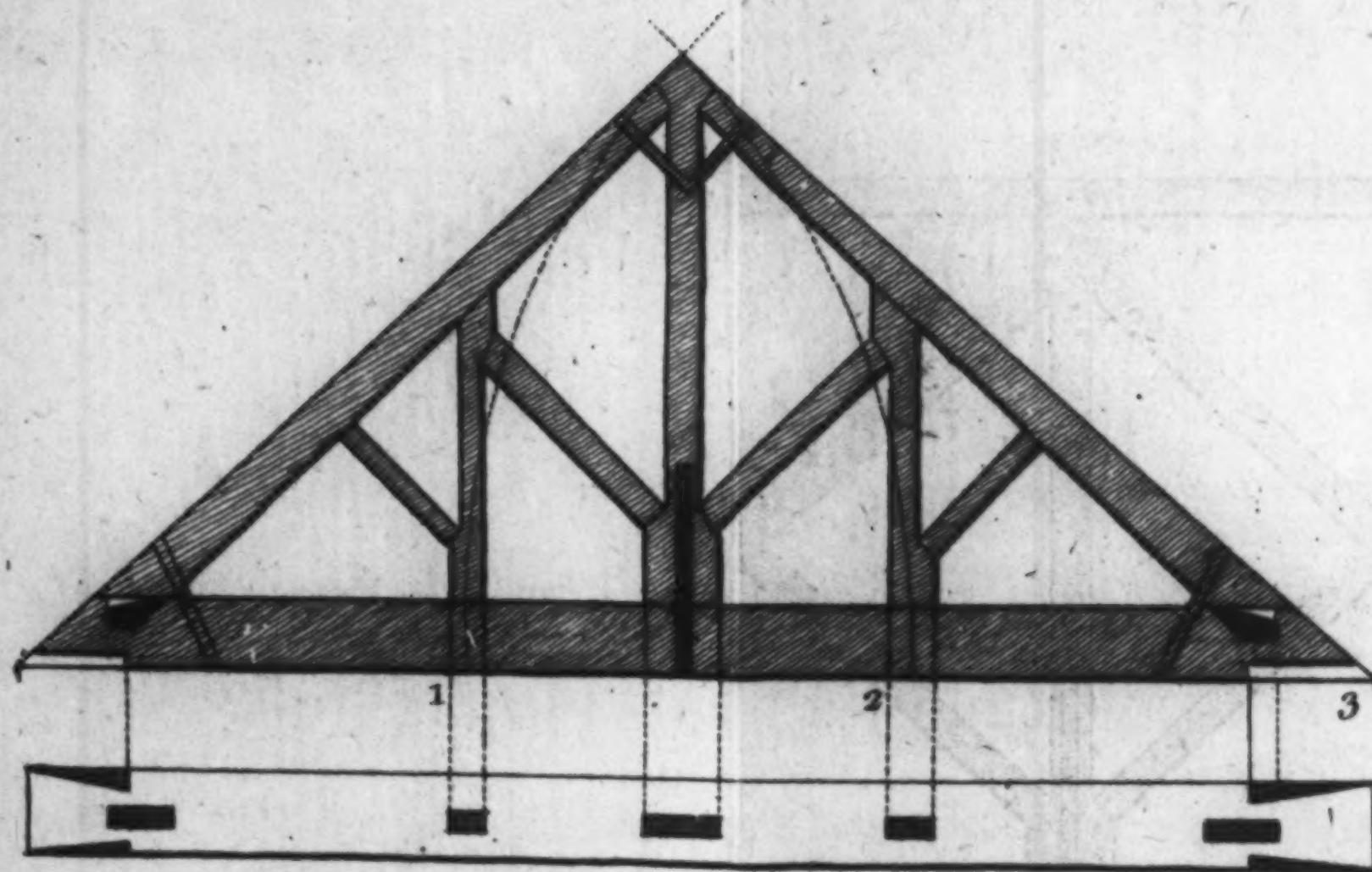
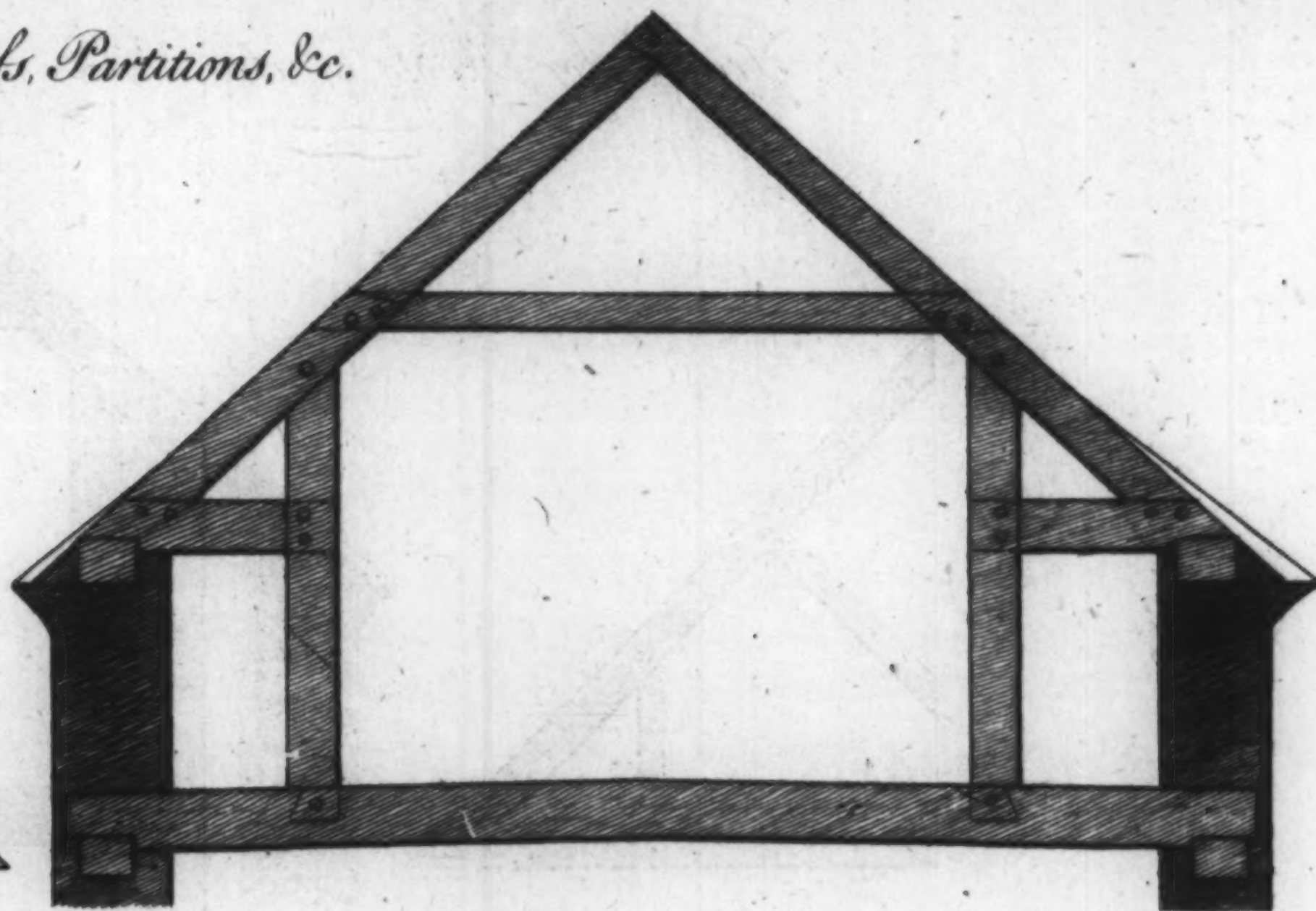
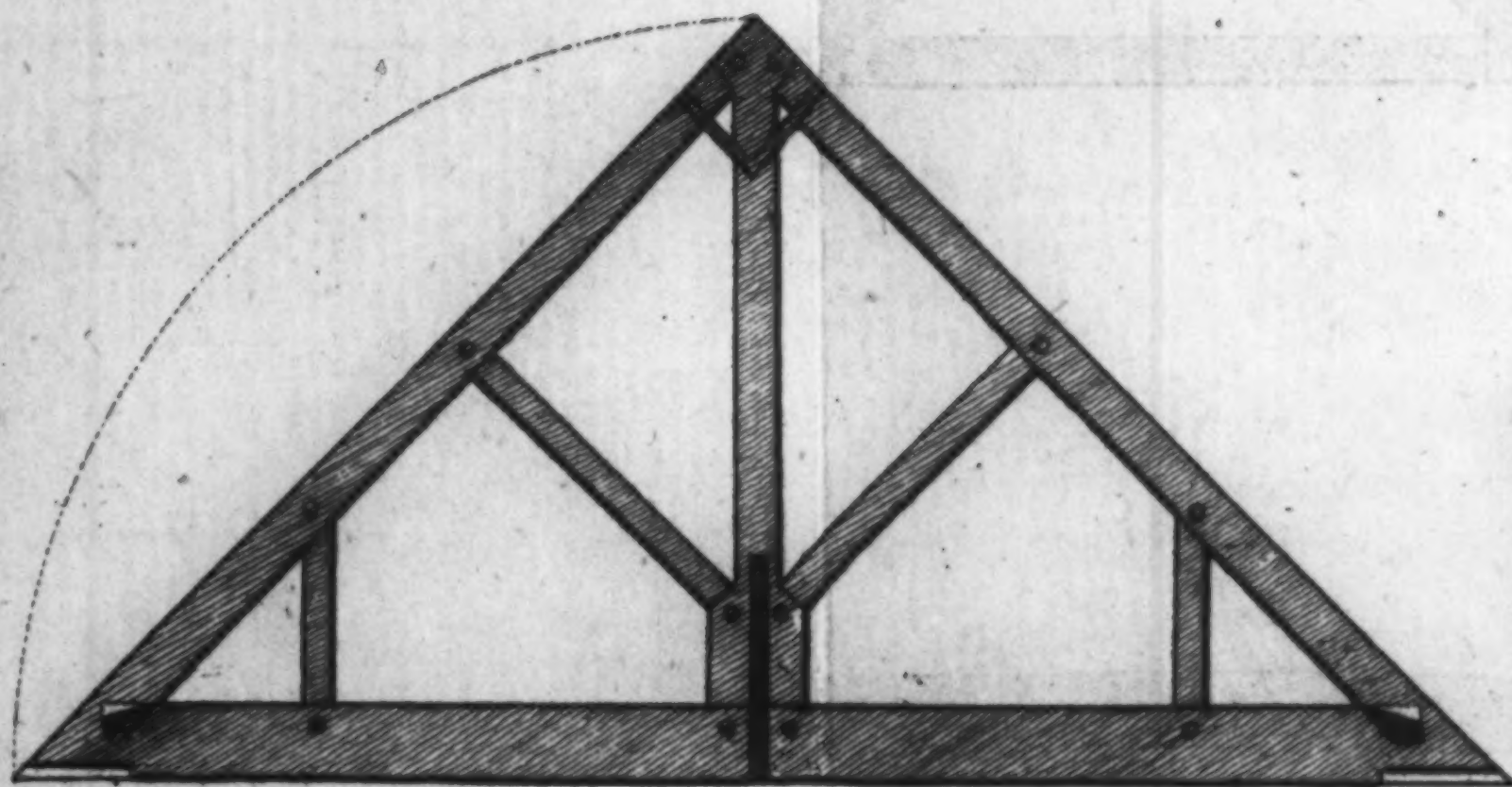
In the next Place shift the Hip Mould back to 1, 1, and mark it by the Mould, which will shew how much Wood is to come off in Backing the Hips A and B. Lastly, shift the Hip Mould to 2, and out at the Top of Fig. A and Bottom of B, and mark it by that, which will shew the Wood to come off.



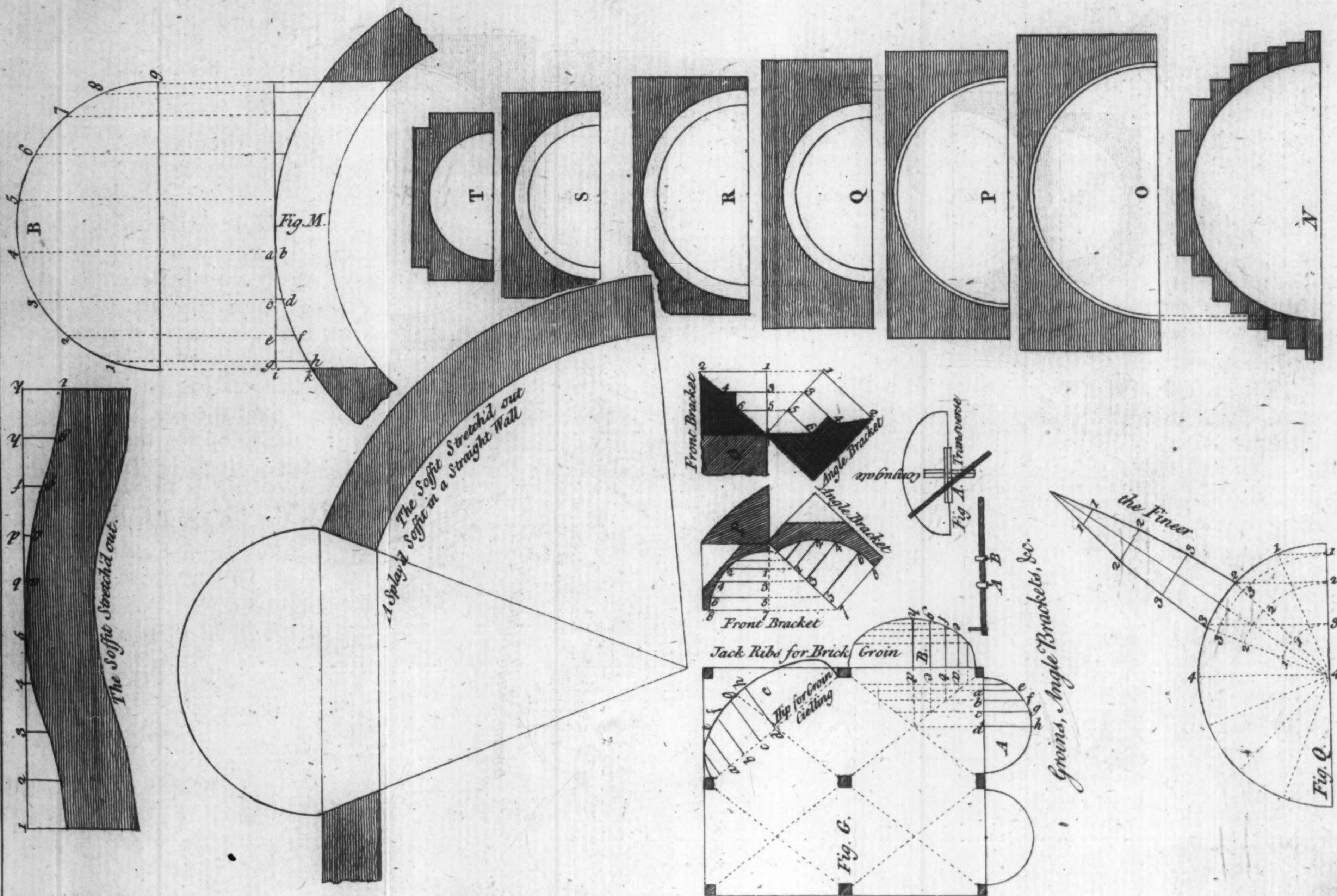
Curve Lined Roofs.



Trusses for Roofs, Partitions, &c.



Piecing for Plates &c.



Of splay'd Soffits in streight Walls, and circular Soffits in circular Walls.

Fig. M, Plate 38, is a circular Wall, where the Jambs and Soffit stand square to the Chord Line of the Opening.

Draw a Line to touch the Arch of the Wall, then draw the Arch Line B, and divide the said Arch Line into as many equal Parts as you please; but the smaller your Parts are, the more true your Work will be. Next drop perpendicular Lines from the Arch to the Wall, stretch the Arch Line out at Length, as Fig. 1. k, with the same Divisions as are round the Arch, and draw the Lines *k, i, b, g*, and so on for the rest.

Then take the Distances from the streight Line to the Wall, as *ik, gb, ef, cd, ab*, and set them on the Parts of the Arch Line stretched out, as *ab, cd, ef, gb, ik*, tack in Nails at the Points *i, g, e, c, a*, and bend a thin Slip round, and mark as that Curve will direct, which will give the Edge of the Soffit that will fit the Wall.

The Trammel is a very useful Instrument in striking Groins, Angle-Brackets, &c. when they are regular. Vide Fig. A.

To make a Trammel, make a Cross at right Angles, with a Groove in the Middle, and to the Rod fix two Heads, to move as a Gage, and a Hole near the End of the Rod for a Pencil, then from the Pencil to the first Head must be Half the Conjugate Diameter, and to the second Head Half the Transverse Diameter.

Plate 36, *Of tracing Groins, Fig. G.*
Angle-Brackets, Glewing Nitches, &c.

To trace the Groin, divide the Base Line of the given Rib A into any Number of equal Parts, and the Base Line of the Rib B into the same Number of Parts, then draw the Ordinates into A, as *a e, b f, c g, d h*, and set them on B, as *e a, f b, g c, h d*, then trace through the Points *e, f, g, h*, which will be the Mould for the Jack Ribs of the Groin, whose Lengths are shewn by the dotted Line drawn parallel to the Base Line.

Fig. C is a Hip for a Groin'd Ceiling traced in the same Manner; *o* and *p* are Angle Brackets, N the Head of a Niche to be glewed in Thicknesses of Plank. Fig. Q shews the Method of tracing the Finer for a Niche, or Cover for a Dome.

From the Divisions of the Arch 1, 2, 3, let fall Perpendiculars to the Base Line 1, 2, 3, and draw the Arch Lines 3, 2, 2, 2, 1, 3; then draw the Length of the Finer, which is half the Arch Line, and the Distance 1 1, 2 2, 3 3: on the Plan is the Width of the Finer when traced through these Points.

A T A B L E,

*Shewing the proper Scantlings for cutting Timber
fit for any Building.*

Girders.		Joist.	
Length in Feet.	Scantlings in Inches.	Length in Feet.	Scantlings in Inches.
10 —	8 and 10	6 —	7 and 3
11 —	8 and $10\frac{1}{2}$	8 —	7 and $3\frac{1}{2}$
14 —	$8\frac{1}{2}$ and 11	10 —	8 and $3\frac{1}{2}$
16 —	9 and 12	12 —	9 and 4
18 —	10 and 12		
20 —	11 and 13	Beams.	
22 —	$11\frac{1}{2}$ and 14	12 —	$6\frac{1}{2}$ and $8\frac{1}{2}$
24 —	12 and 15	16 —	7 and 9
Trimming Joist.		20 —	8 and $9\frac{1}{2}$
5 —	3 and 7	24 —	$8\frac{1}{2}$ and 10
6 —	4 and 7	28 —	9 and 11
7 —	5 and $7\frac{1}{2}$	30 —	10 and 12
8 —	5 and 8		
9 —	5 and $8\frac{1}{2}$		
10 —	6 and 9		

The Scantlings of raising Plates, from 7 by 4 to 8 by 5, or 9 by 6.

Principal Post, from 10 by 8 to 9 by 7.

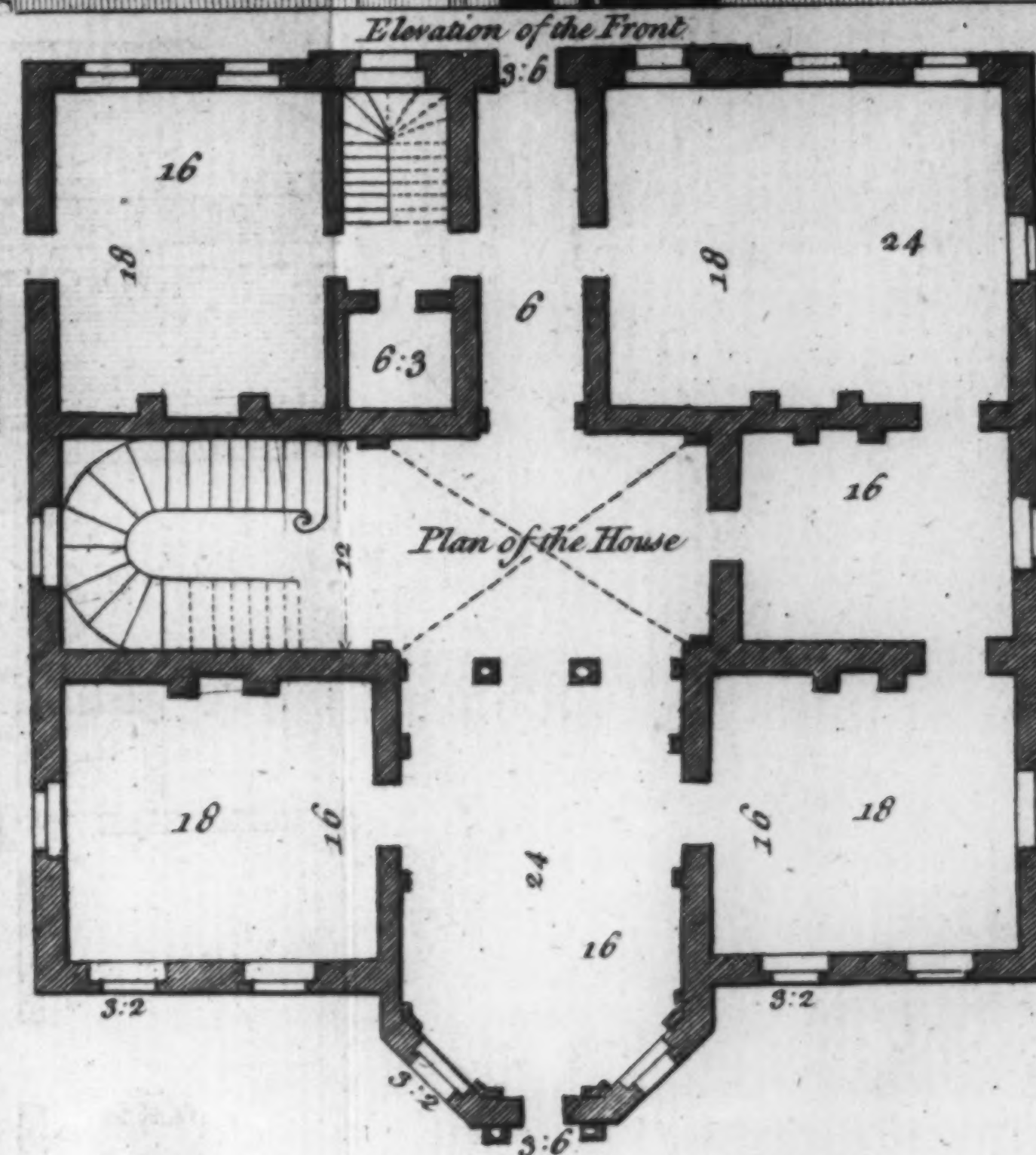
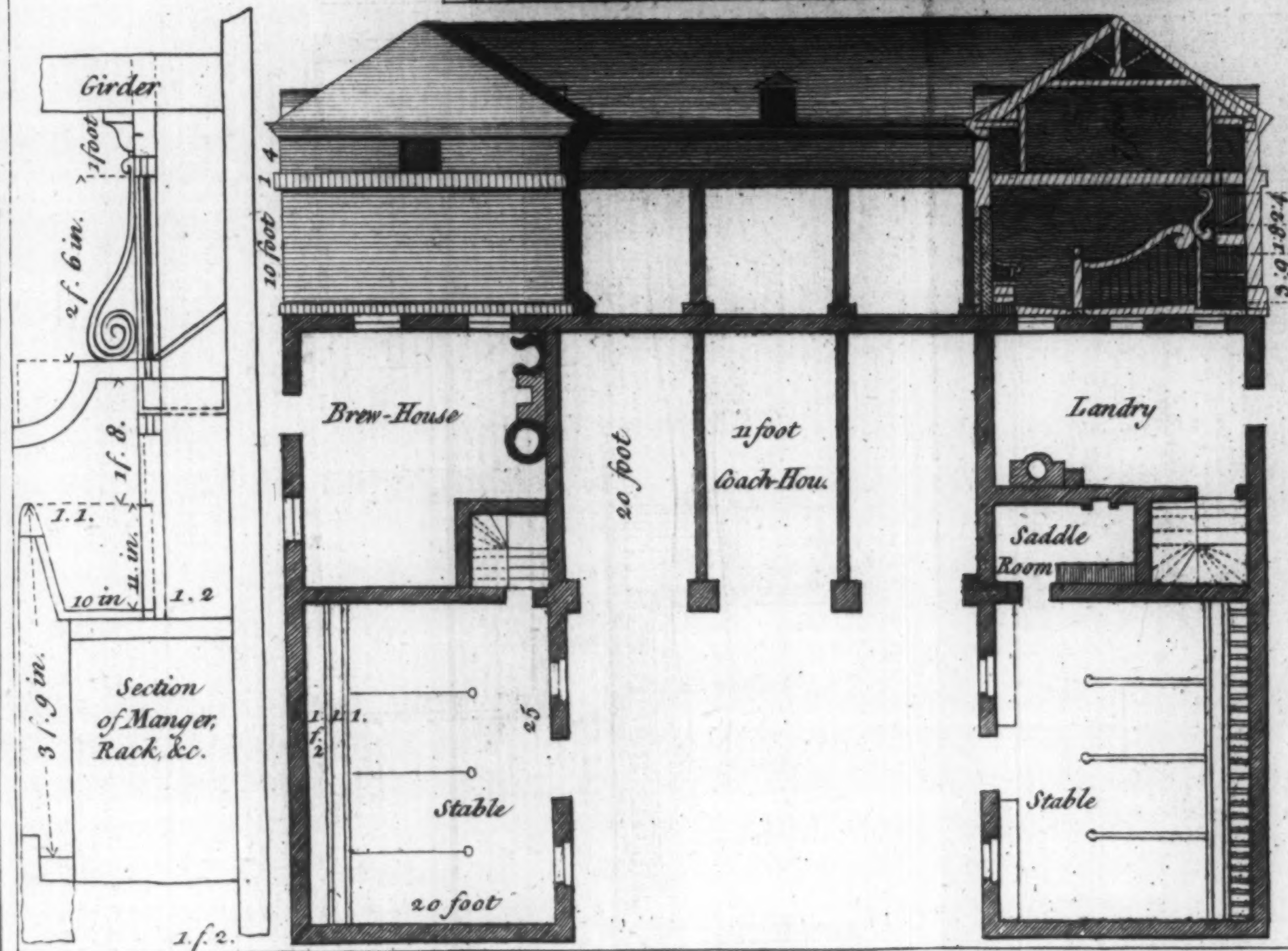
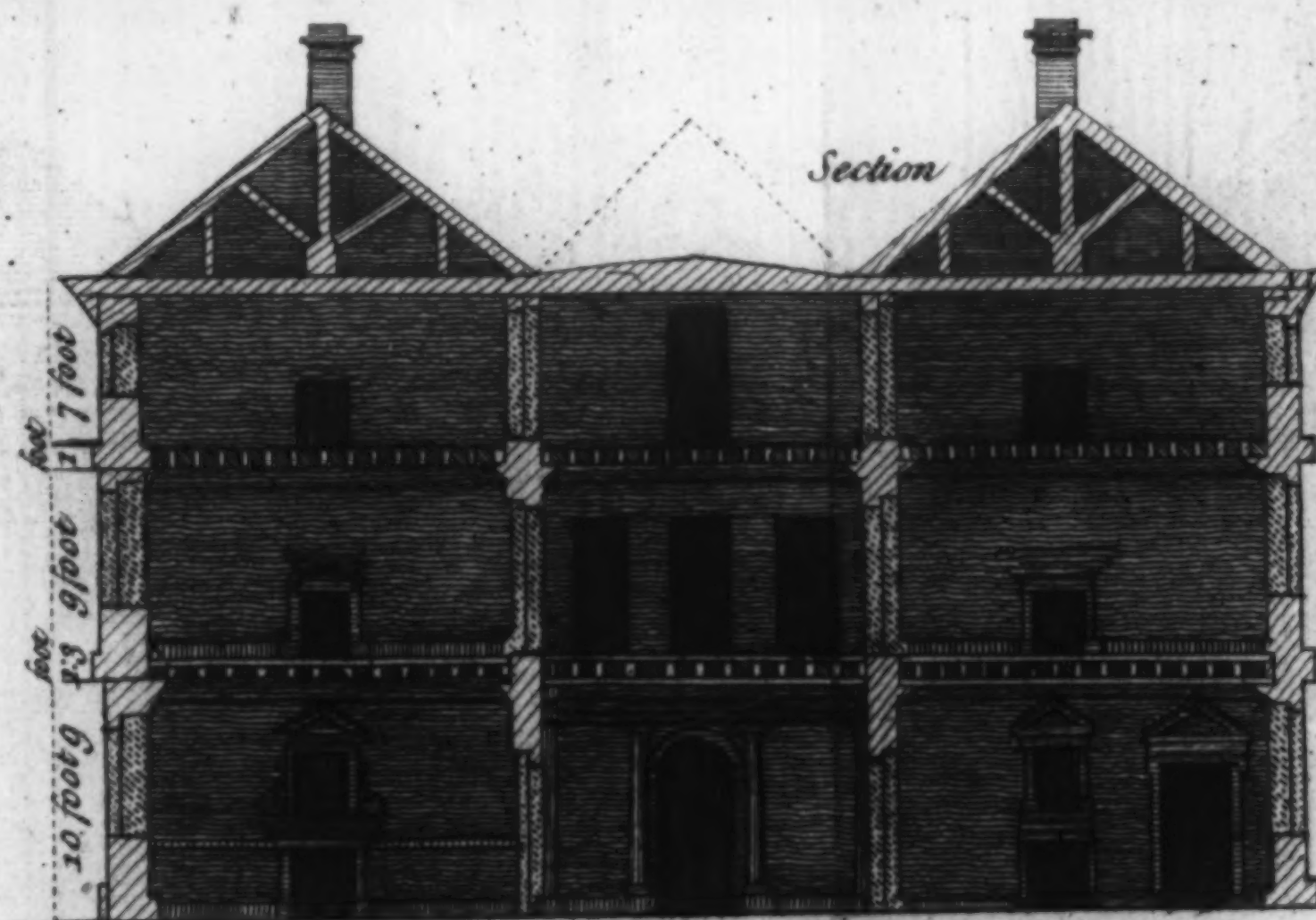
Principal Rafters.

	at Bottom.	at Top.	Thick.
From 12 to 14 Feet in Length must be	8	5	5 Inches.
From 14 to 18 — — — — —	9	7	6 —
From 18 to 21 — — — — —	10	8	7 —
From 21 to 24 — — — — —	12	9	8 —

Single Rafters must be, in their Squares, from 4 by 3 to 5 by 3, or 5 by 4.

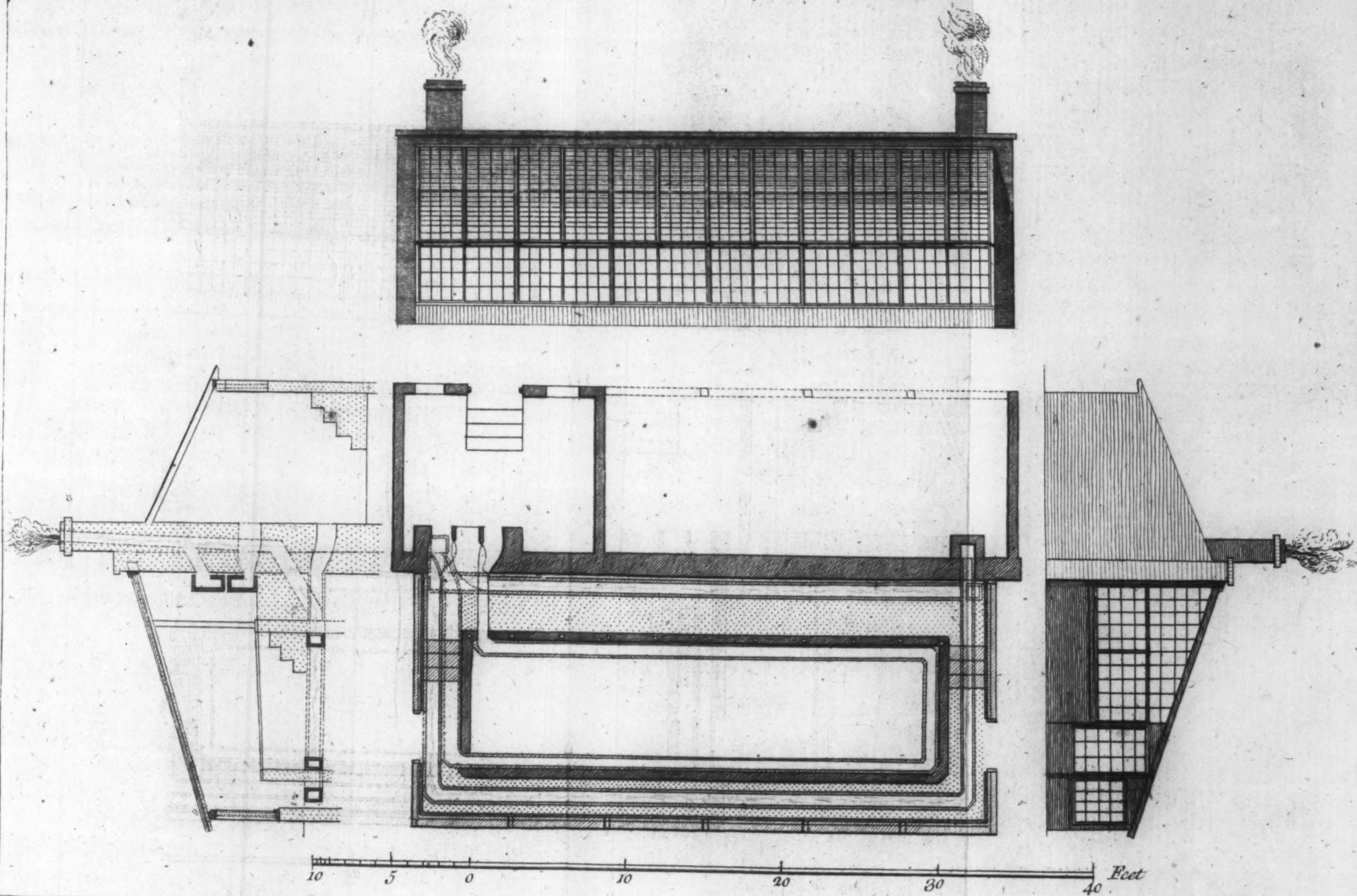
Purlines, from 8 by 5 to 9 by 8, or 9 by 12; but in small Buildings they may be 5 by 6, or 5 by 7.

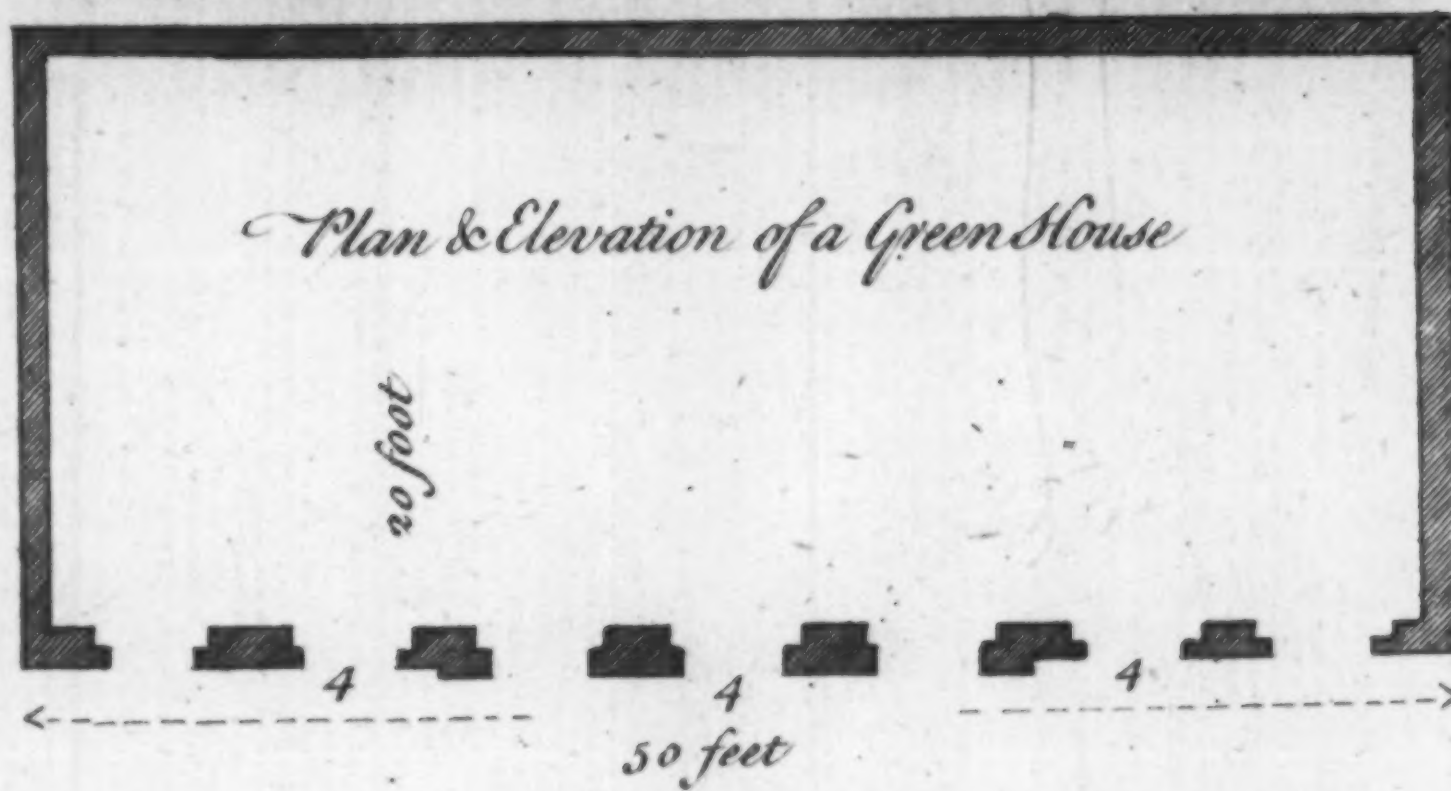
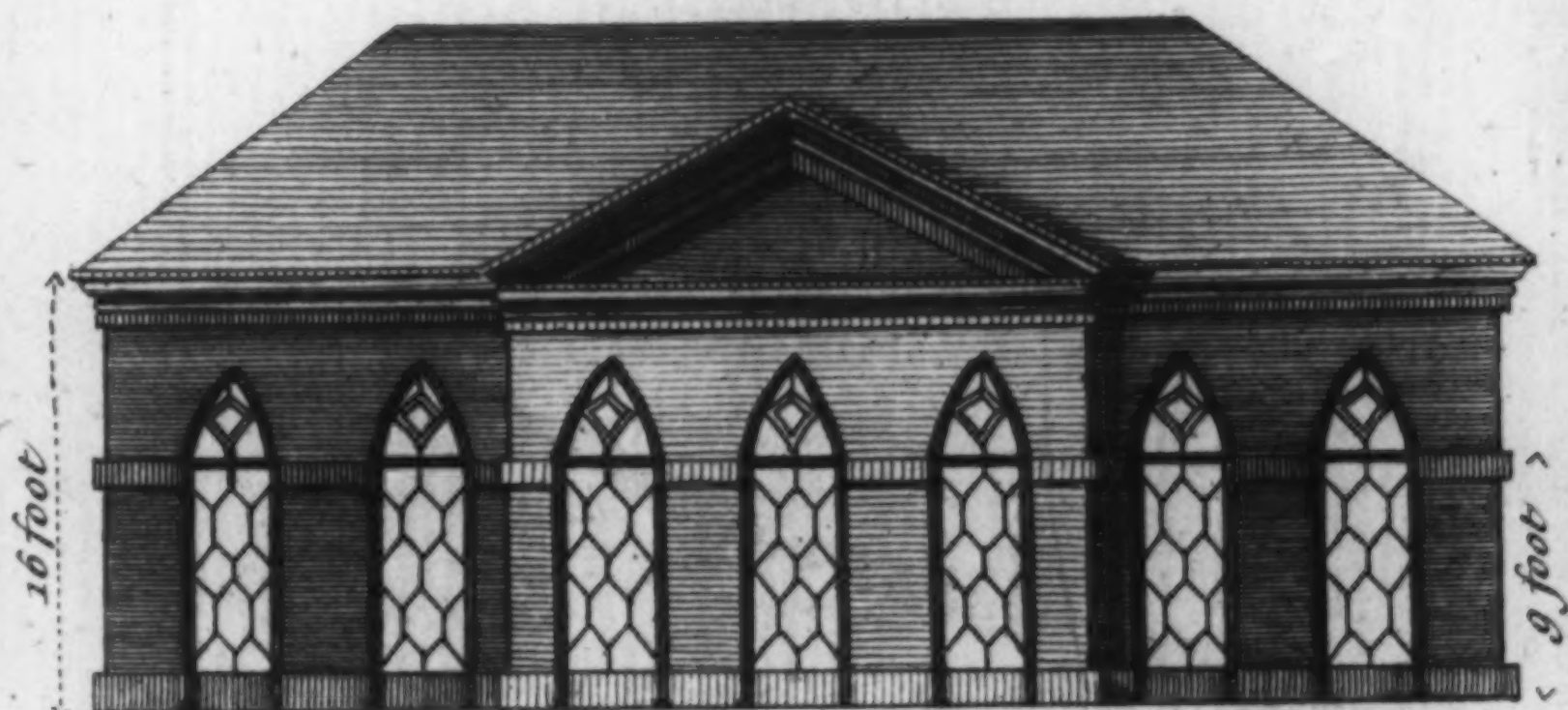
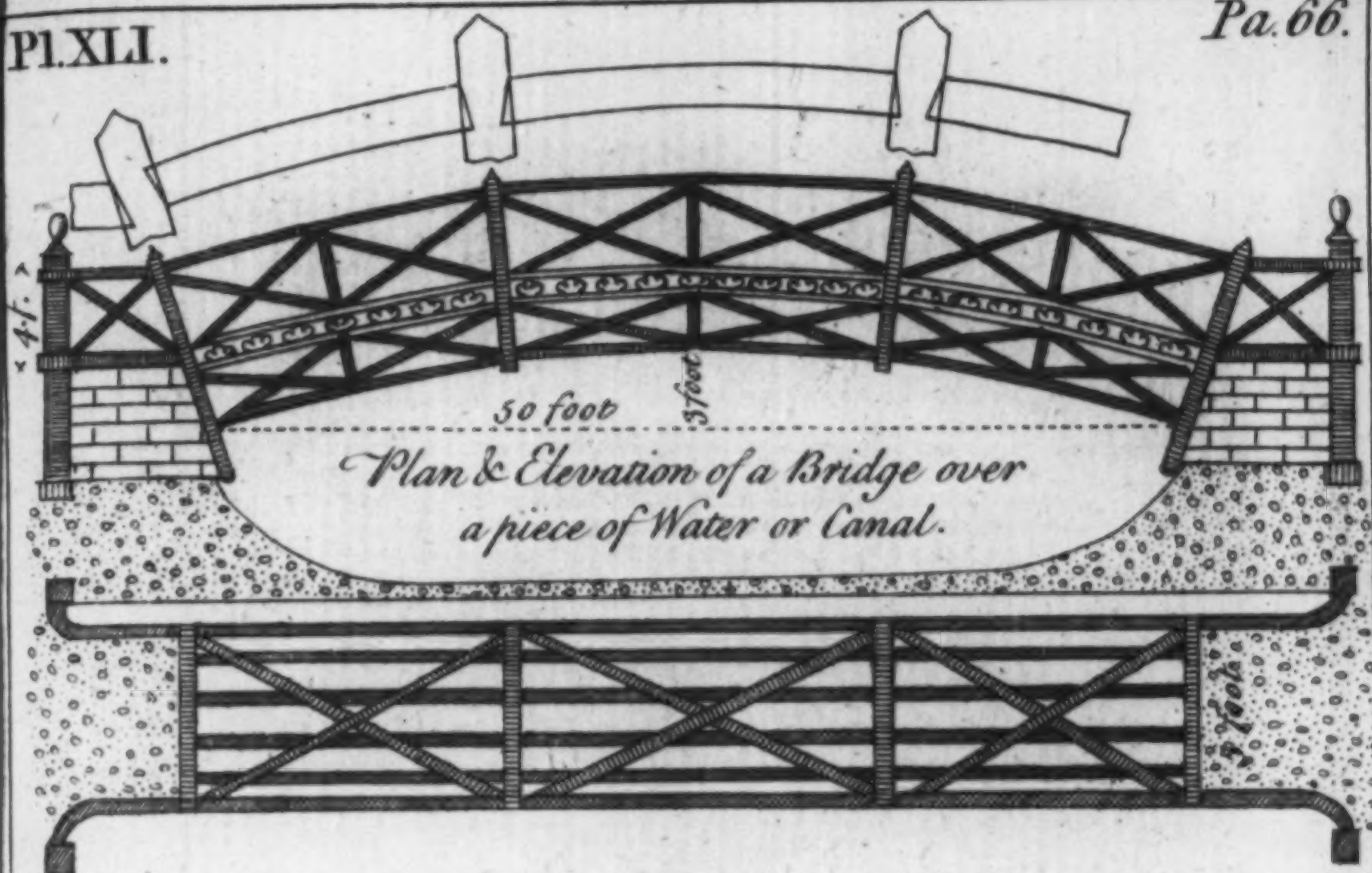
Cills, from 6 by 7 to 8 by 9.



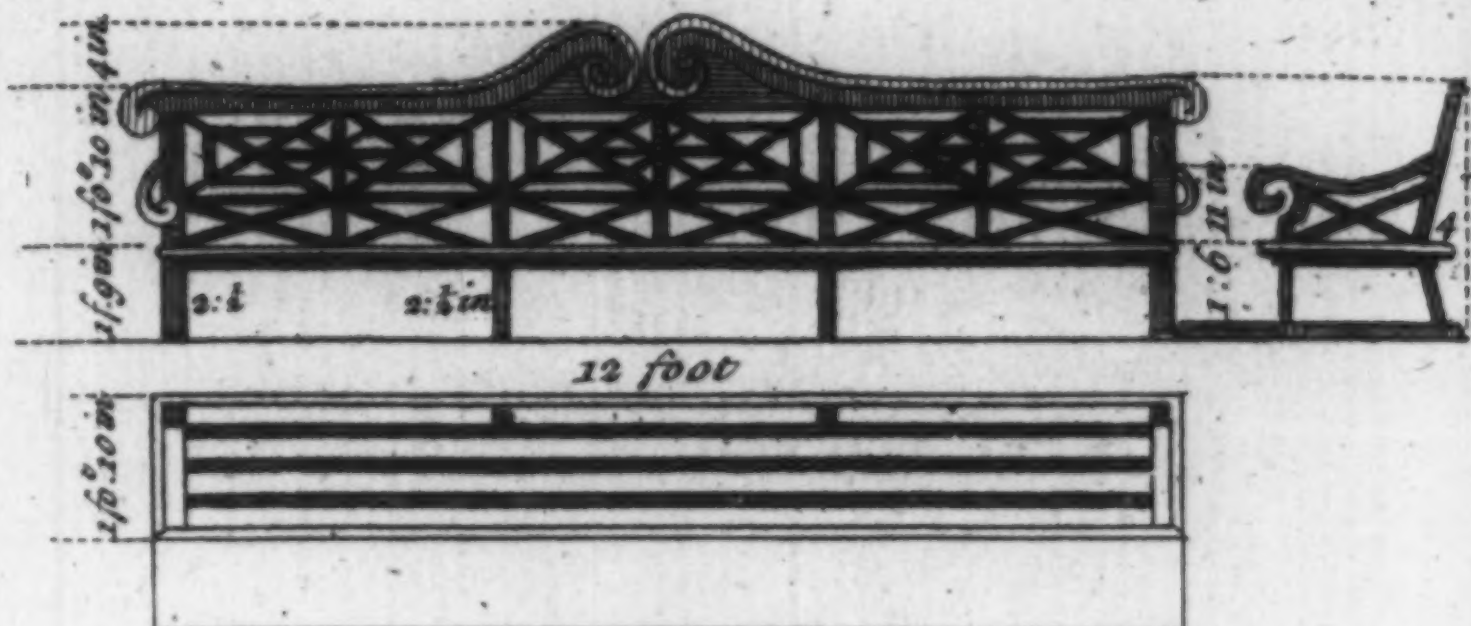


Plan, Elevation, and Section of a Hot House.

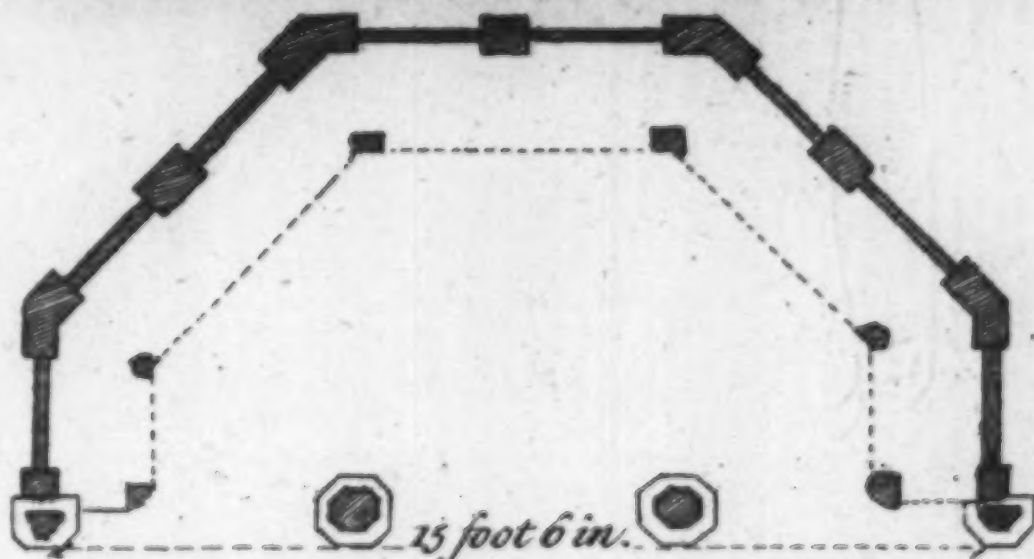
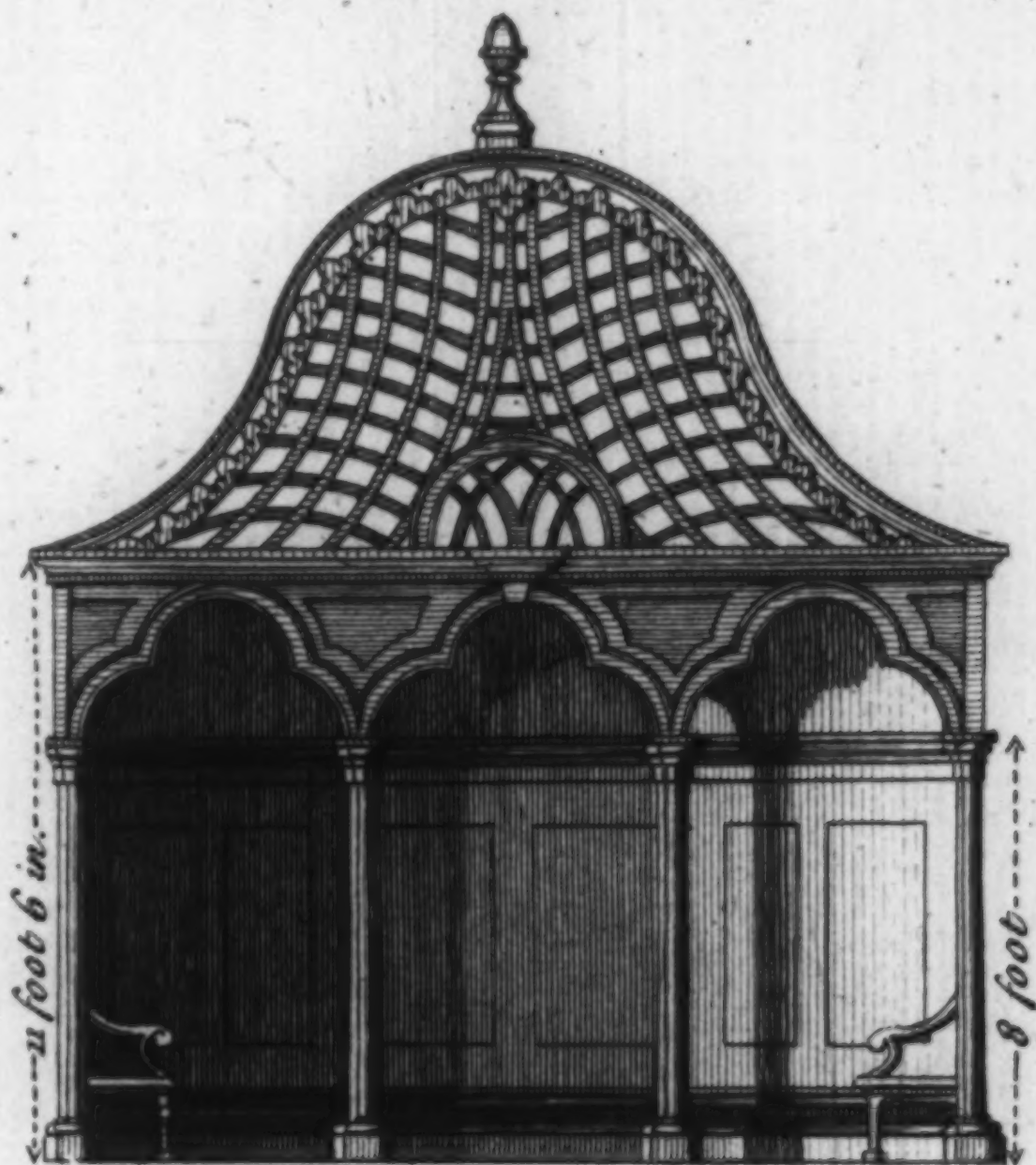








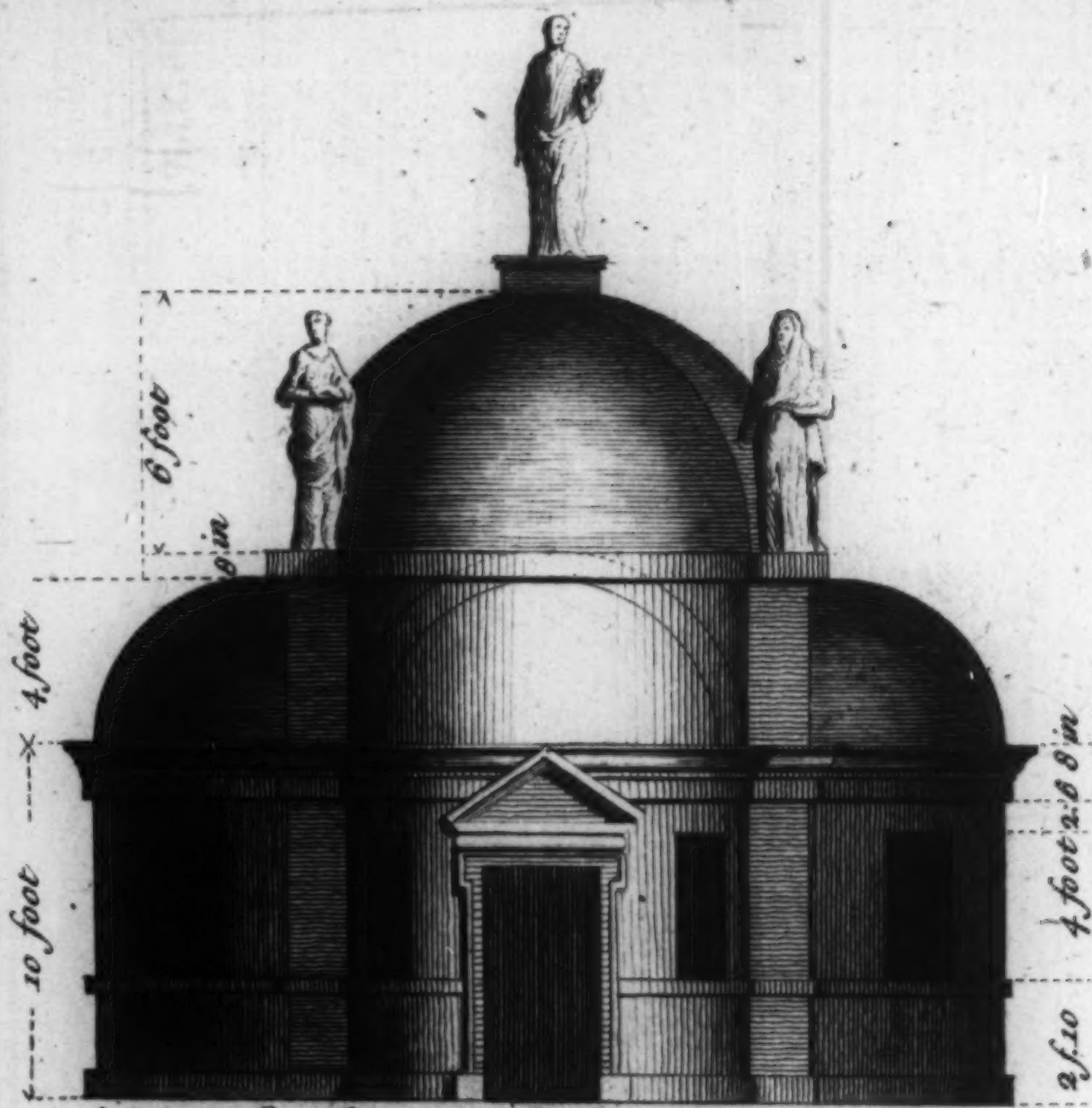
Seat for a Garden



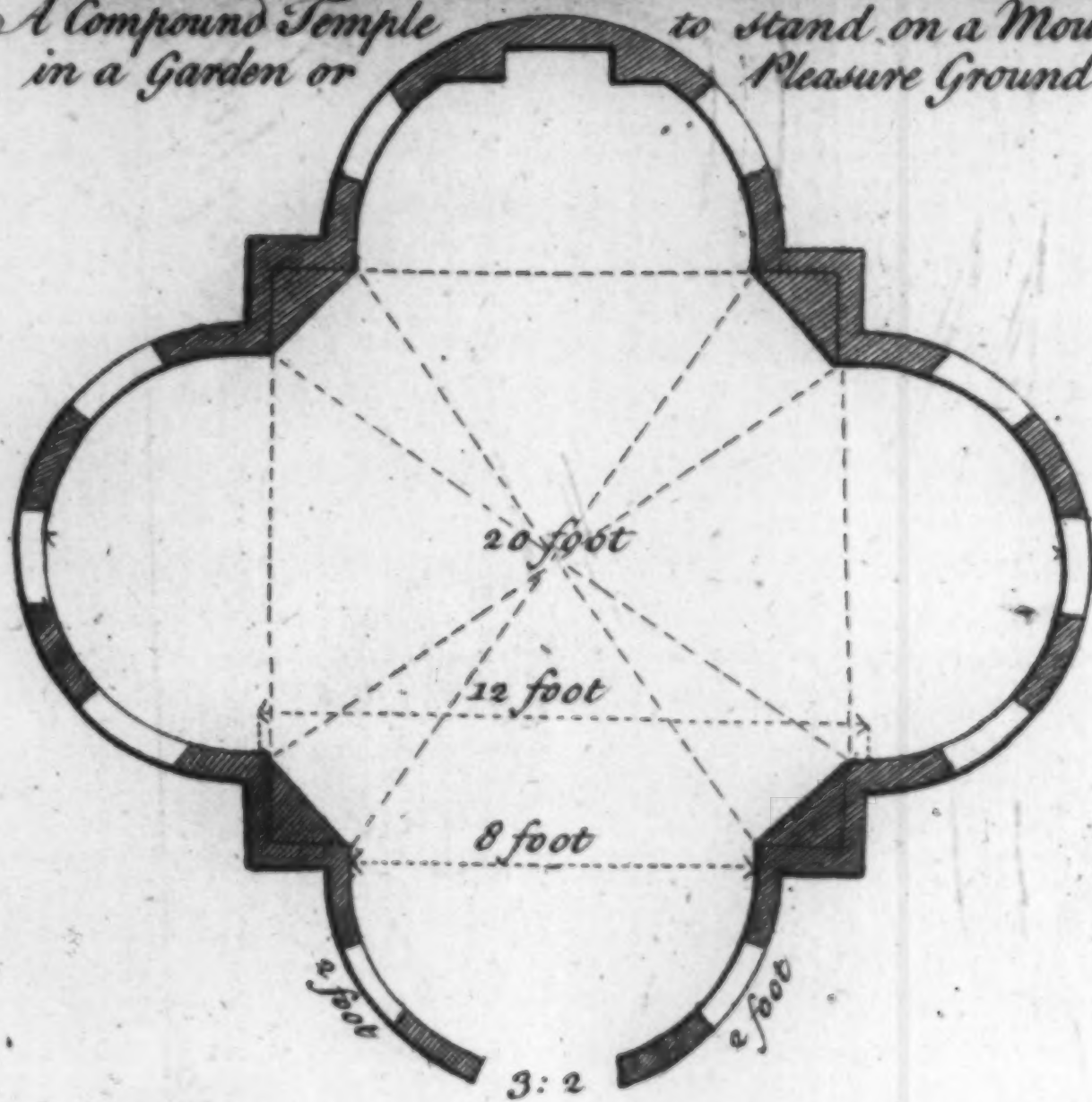
A Compound Alcove Seat for a Garden.



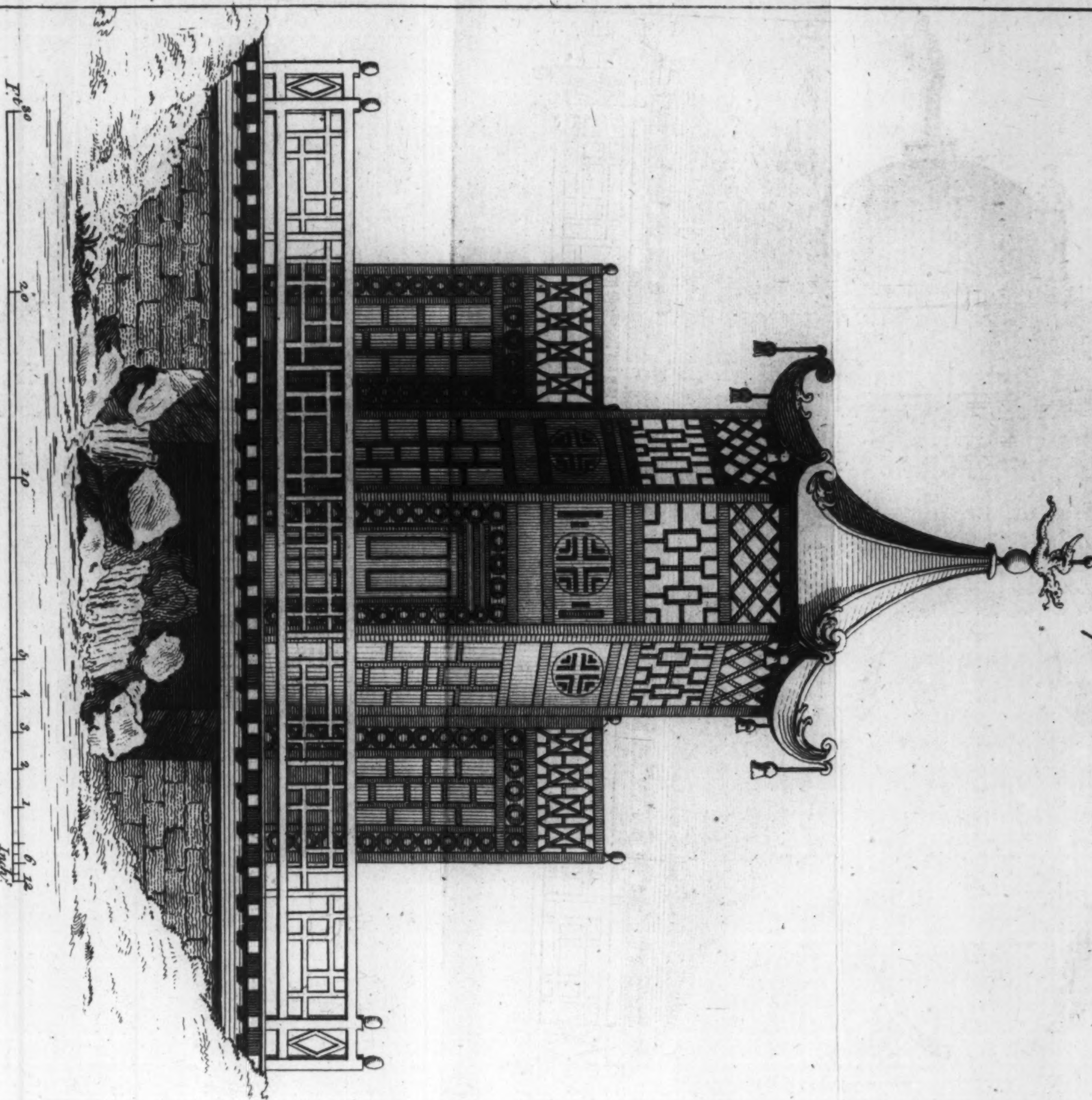




A Compound Temple in a Garden or to stand on a Mount Pleasure Ground



A Chinese Temple.



Feet

20

20

4

4

3

2

1

6 12
Inch



A P P E N D I X

TO THE

Builder's Pocket-Treasure.

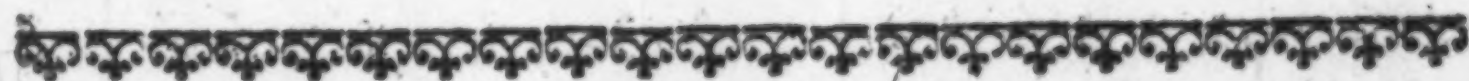
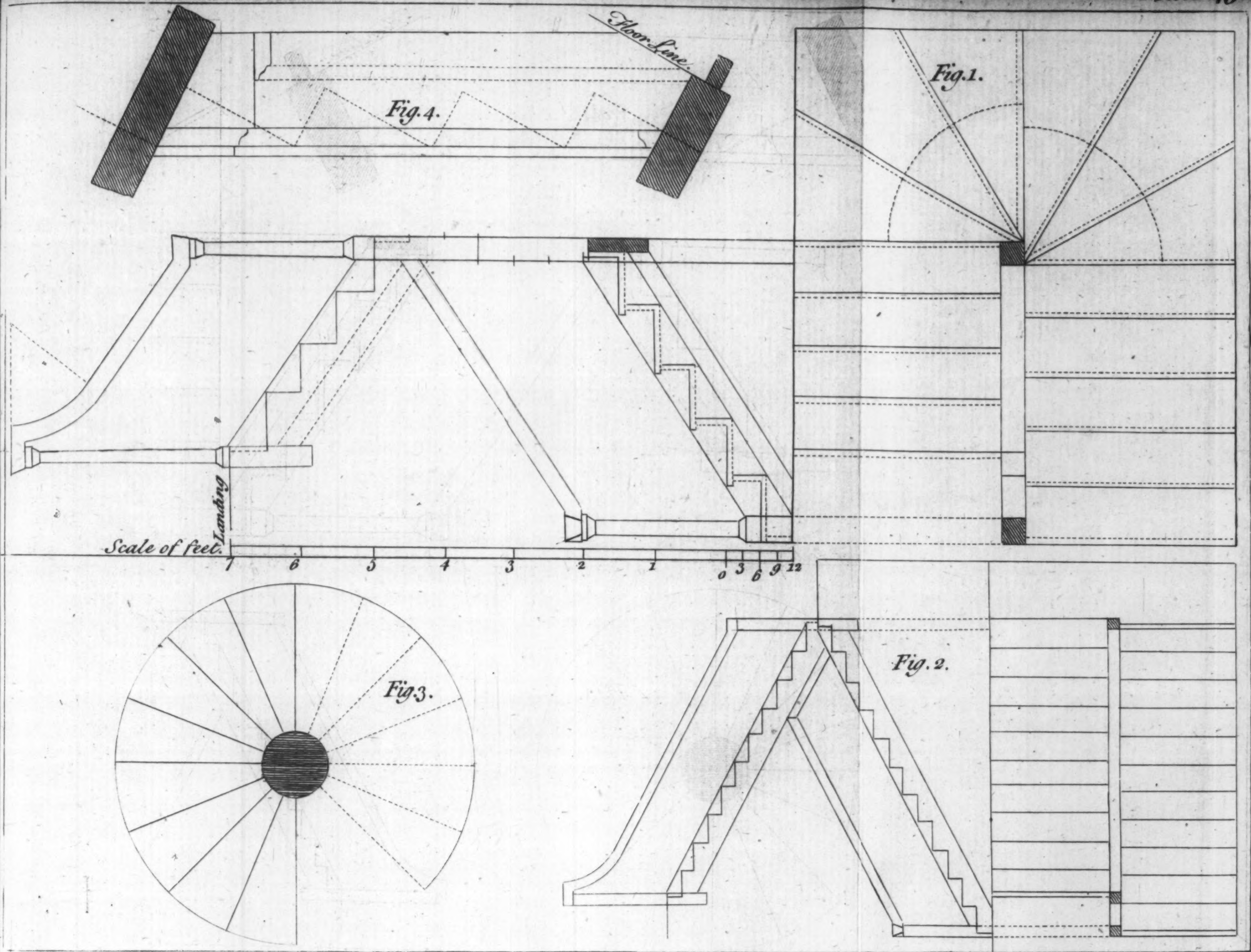


Fig. 1. is a Plan and Elevation of a Stair-case, with two quarter Windows, and flies back with a Knee and Ramp at the Top; shewing how the Strings, Newels, &c. are framed together.

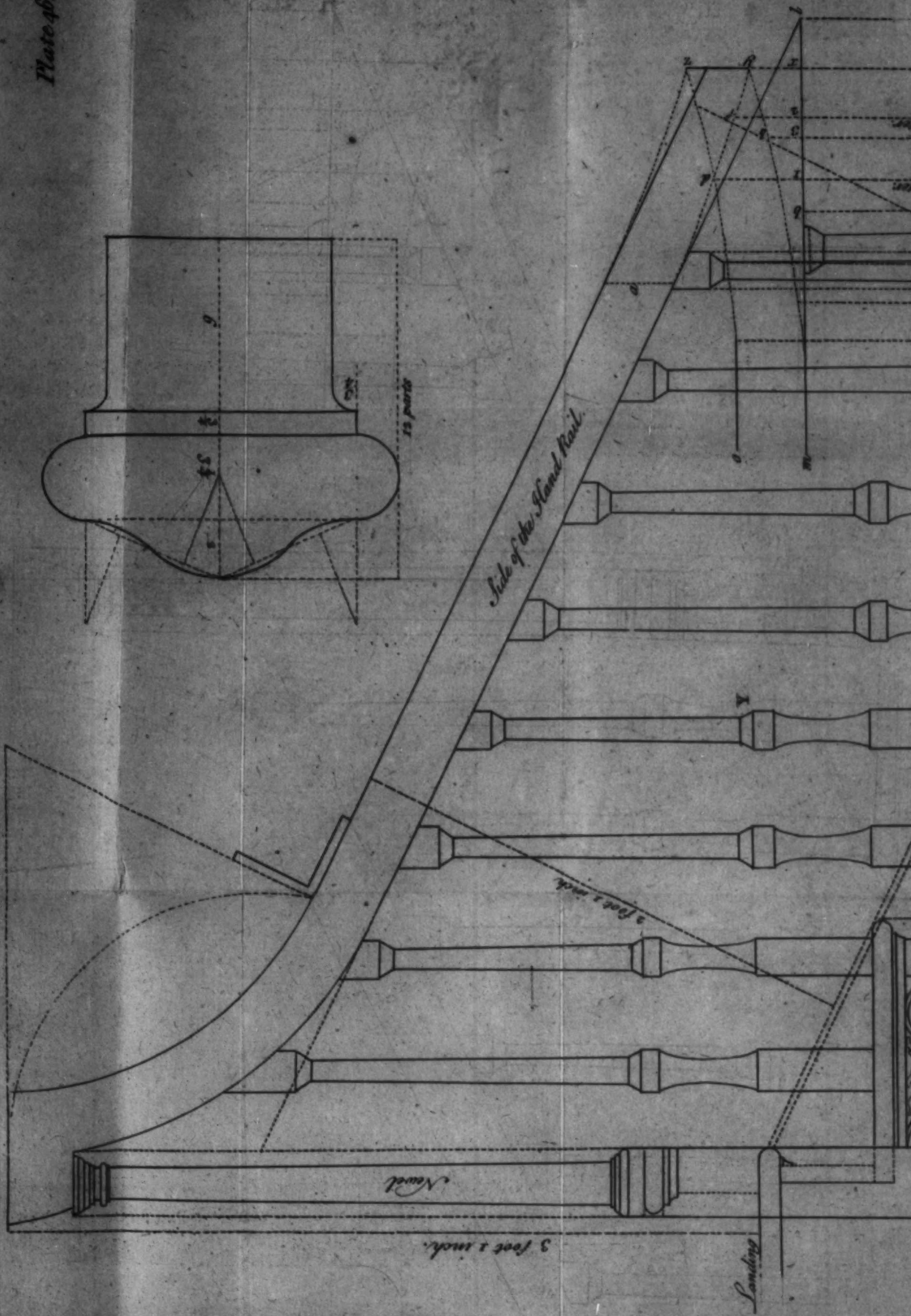
Fig. 2. is a Stair-case, whose upper Flight returns in the Thickness of the Newel, so that the lower Hand-rail must necessarily knee under the String-board of the upper Flight; as is shewn in the Elevation.

Fig. 3. is a Plan of the Stair-case round a Newel.

Fig. 4. is part of the String-board and Cap for the Banisters of Fig. 1. and 2. to stand on.







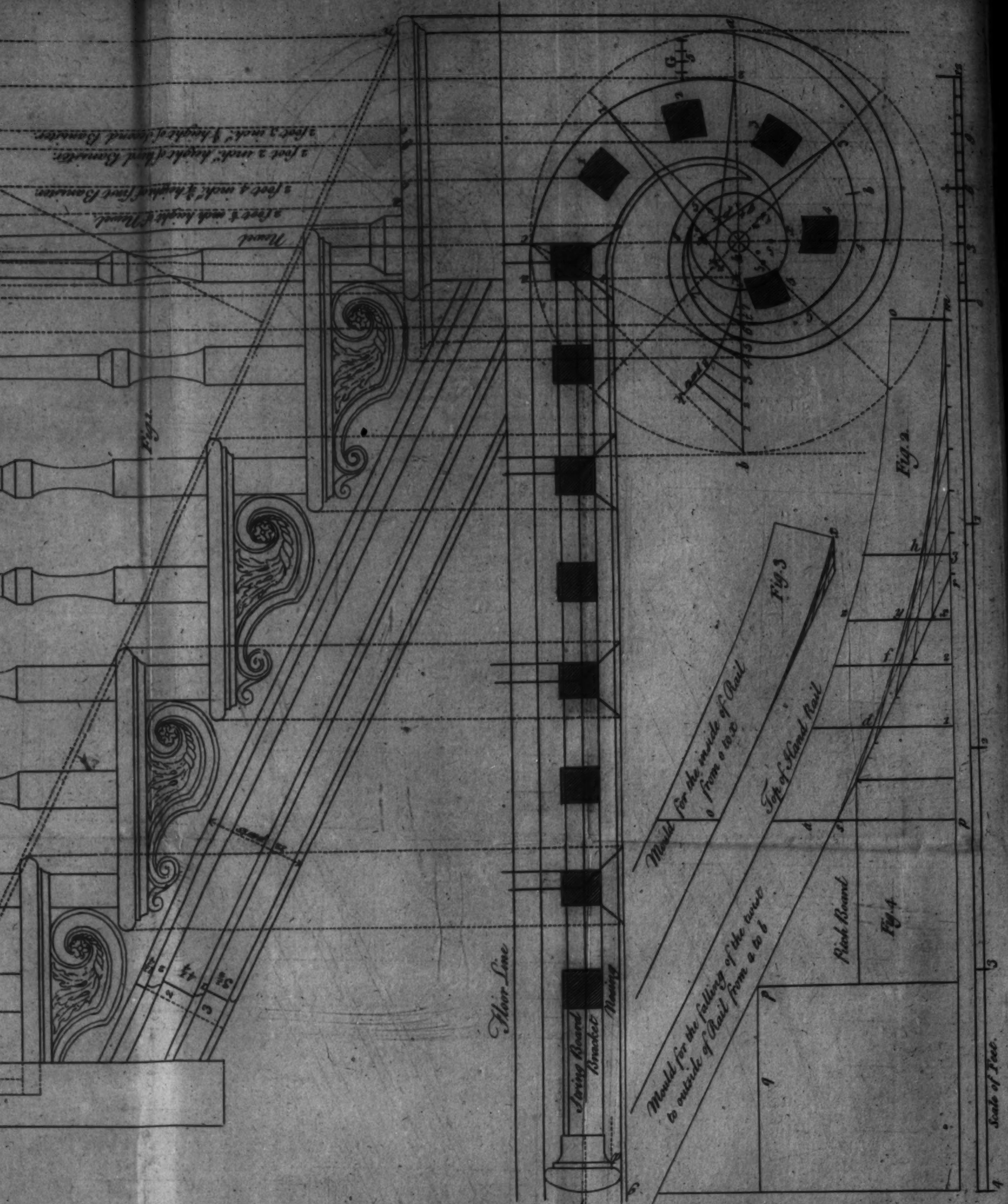


Fig. 1. is the Plan and Scrole of the Twist-Rail for a Stair-case, with the Elevation of the Steps, Newels, Hand-rails, &c. to draw which, proceed in this Manner :

First, describe a Circle, whose Diameter shall be equal to the Breadth of two Steps, as $a b$; then divide the Circle into 8 Parts, and draw Lines from the Center to each Division. Draw the Chord-line $c b$, which will be a fourth Part of the Circle, and taking the Projection of the Round Part of the Hand-rail, with that Distance describe a small Circle round the Center of the Eye. Take half the Width of the Hand-rail $f g$, set it on without the small Circle, as $b i$, and describe a Circle with that Radius. In the next Place, set one Foot of the Compass on c , and extend the other to touch the Outside of the Circle last drawn at i , and draw the Arch-line $i k$, which Arch is to be divided into 8 Parts, and a Line drawn from the Center c , through each of those Divisions, and continued to the Line $i b$, will be the diminishing Scale,

To diminish the Scrole, set one Foot of the Compasses on the Center of the Eye, and extending the other to 1 on the Scale $i b$, turn it over to 1 on the first 8th Part of the Circle from C , next take the Semi-Diameter from the Center of the Eye to 2 on the Scale, and turn it over to 2 on the second 8th Part of the Circle, then the Distance from the Center, to 3 on the Scale, must be turned over to 3 on the third 8th Part, and this Method is to be observed with Respect to all the other Divisions, till you come to the sixth, which will fall on the
 at 6. To

To find the Centers for drawing each 8th Part, take the Distance from the Center of the Eye, to *b* at the Top of the Scale, and, with that Radius, setting one Foot of your Compasses at *a*, on the Side of the Rail where the Twist begins, describe a small Arch; and, with the same Radius, set the Foot at 1 on the Side of the Rail, and intersect the former Arch at *i*, which is the Center for the first 8th Part from *a* to 1: then set one Foot of the Compasses in the Center of the Eye, and extend the other to 1 on the Scale, and with that Distance, setting the Foot of your Compasses at 1, on the Edge of the Rail, describe a small Arch with the same Radius, placing the Foot of your Compasses at 2, on the Edge of the Rail: intersect the former Stroke on *n*, which is the Center for the second 8th Part.

With the Distance from the Center of the Eye, to 2 on the Scale, set the Foot of your Compasses at 2, on the Edge of the Rail; describe a small Arch, and removing your Compasses to 3, intersect this Arch at *o*, which will be the Center for the third 8th Part. Then take the Distance from the Center, to 3 on the Scale, and setting the Foot on 3, describe an Arch at 7, which, intersected from the Point 4, will give the Center for the fourth 8th Part.

In like Manner, the Point of Intersection between the Points 4 and 5, with the Distance from the Center of the Eye to 4, will give 9 for the Center of the fifth 8th Part, and the intersecting Point *r*, between 5 and 6, with the Distance from
the

the Center to *g*, will be the Center of the sixth Division. To draw the remaining Part of the Scrole, from 6 round to 8, where it dives into the Circle of the Eye, the Center will be at *S*. To find which, divide the seventh Division on the Scale, into 3 Parts, and take the Distance from the Center of the Eye, to one of those Thirds at *t*, and with this Radius, setting one Foot of your Compasses at 6 on the Scale, describe an Arch, which intersect from the Point 8 on the Edge of the Circle, and you will have the Center *S*.

A Scrole thus finished, has a much better Effect than if it was performed by two Centers, for they make it too flat.

The Centers for drawing the Riser and Nosing of the Steps, are marked thus*; and are each a fifth Part of the Space between the Edge of the Rail and the Face of the Riser, as at *G*.

Each 8th Part of the inside Curve of the Rail, meets at the Black Lines drawn from the Center to the Outside of the Rail.

Y is the Elevation of the Stairs, shewing the Ramp and Twist of the Hand-rail, Length of the Newels, Banisters, String, or Architrave Brackets, &c. with their Portion of standing over the Plan; as also the Banisters, mitre of Nosing, cutting of the Architrave to the Floor and curtail Step.

a b is the Length of the Newel under the Twist.

c d the first Banister.

e f the Second.

g h the Third.

The Fourth and Fifth, under the Eye, are equal to the Length of the Newel.

Every

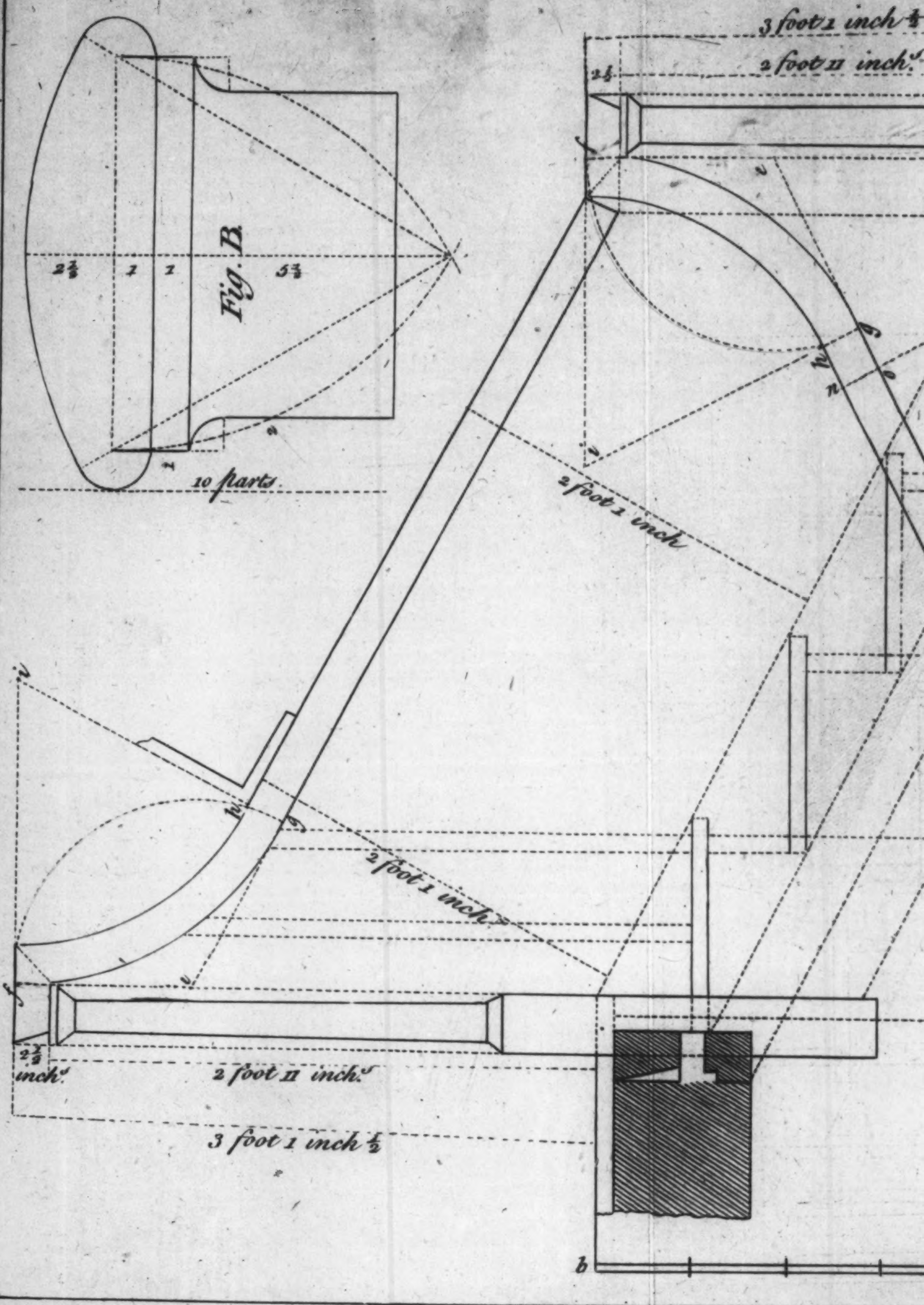
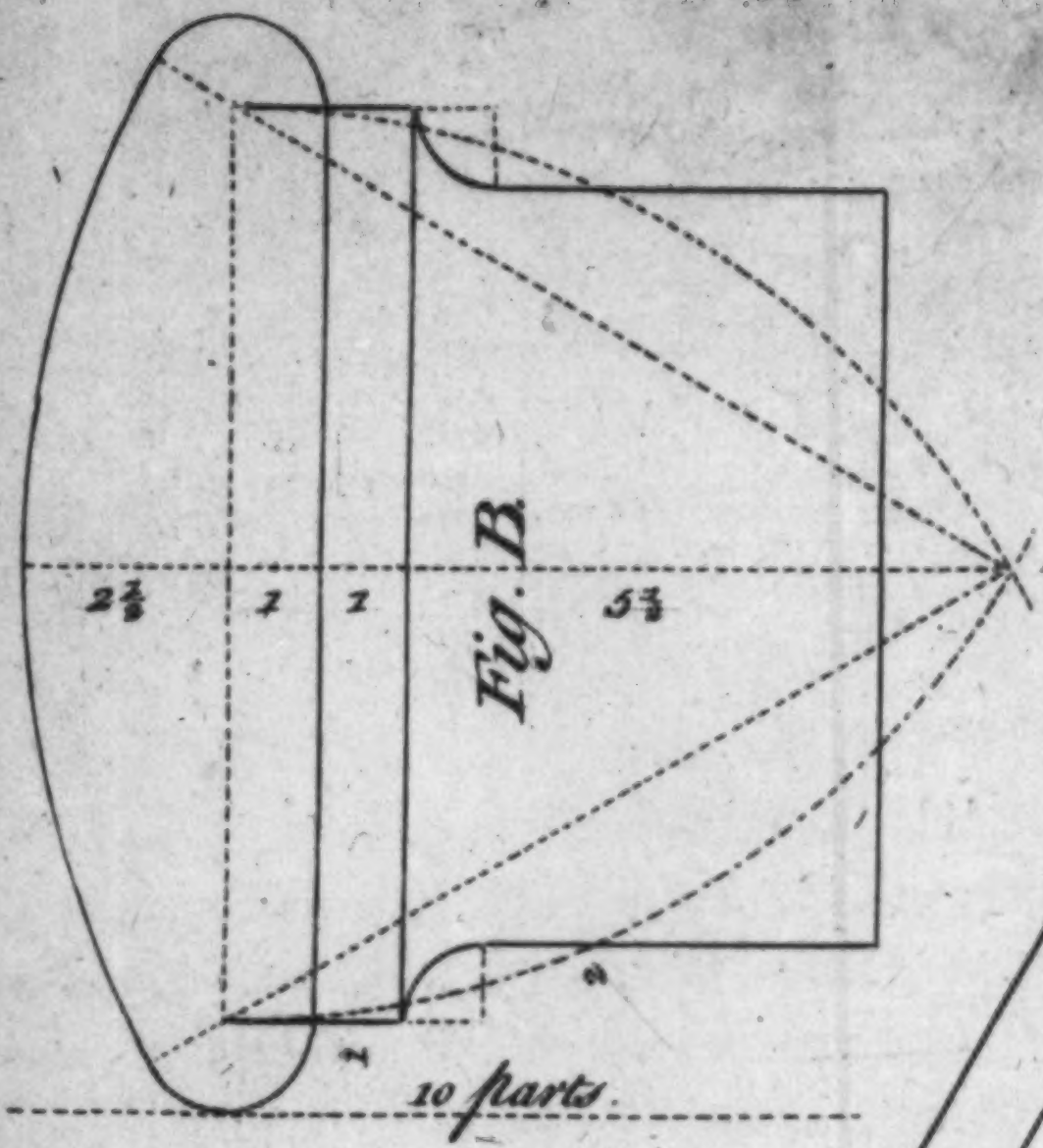
Every Dimension of this Plan and Elevation may be easily known by having recourse to the Scale of Feet and Inches at the Bottom of the Plate.

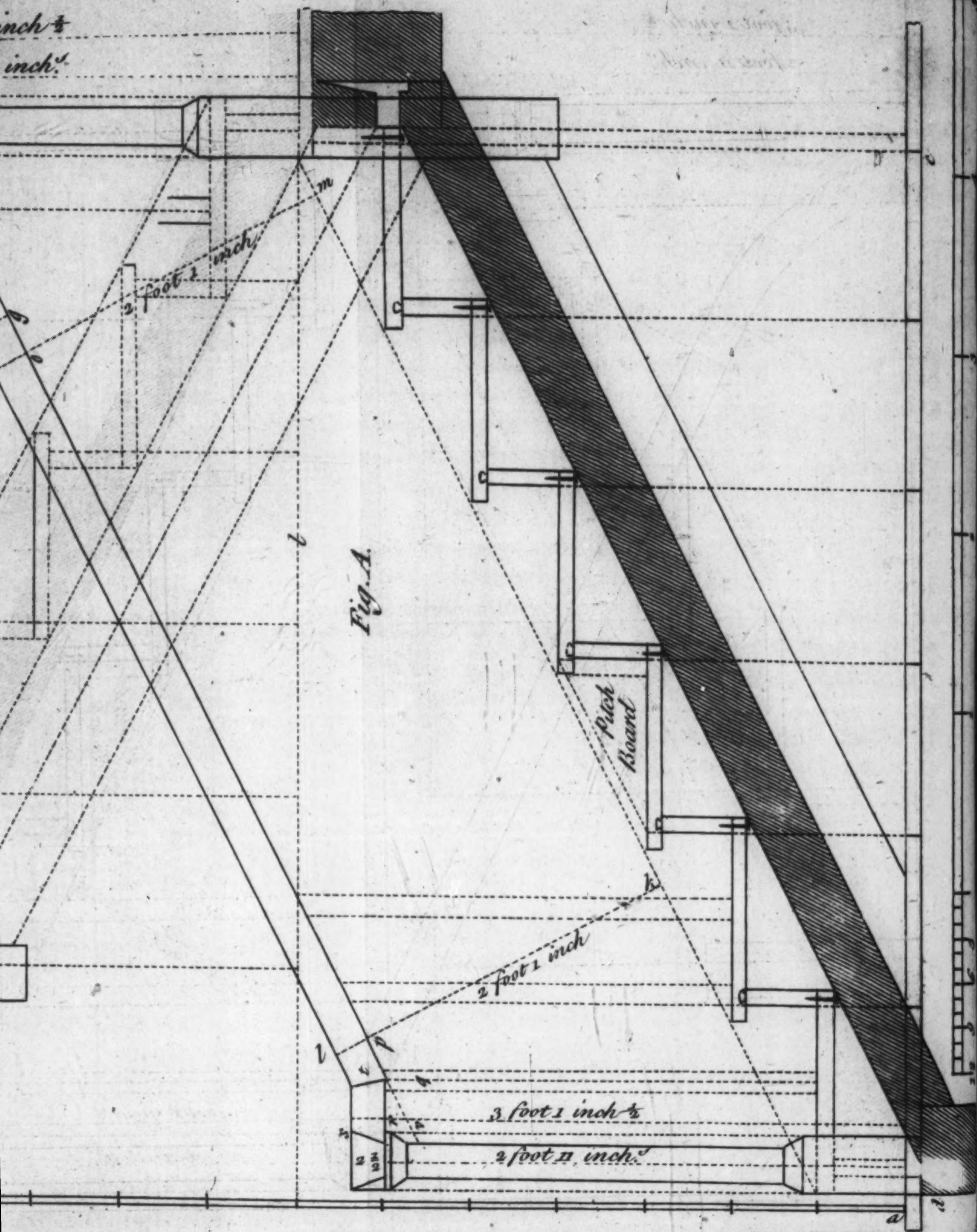
Fig. 2. is the Mould for the falling of the twisted Part of the Hand-rail from *a*, where the Twist begins, to *b* on the Plan, where it ends, the remaining Part of the Scrole being level.

Fig. 4. is a Pitch-board made to three Steps, and that Part of the Base-line, marked *m p*, is the Twist Part of the Rail stretched out.

Divide *r m* (being that Part of the Line *p m* which extends itself beyond the Point of the Pitch-board) into any Number of equal Parts, and the Raking-line of the Pitch-board into the same Number of Parts, and by drawing Right-lines between those Divisions, you will have the Curve to the falling of the Twist on the Under-side of the Rail, then set on the Depth of the Rail *m o y z*, and your Mould is compleated.

Fig. 3. is a Mould for the falling of the Twist to the Inside, from *o* to ***, traced by Lines the same as in Fig. 2.



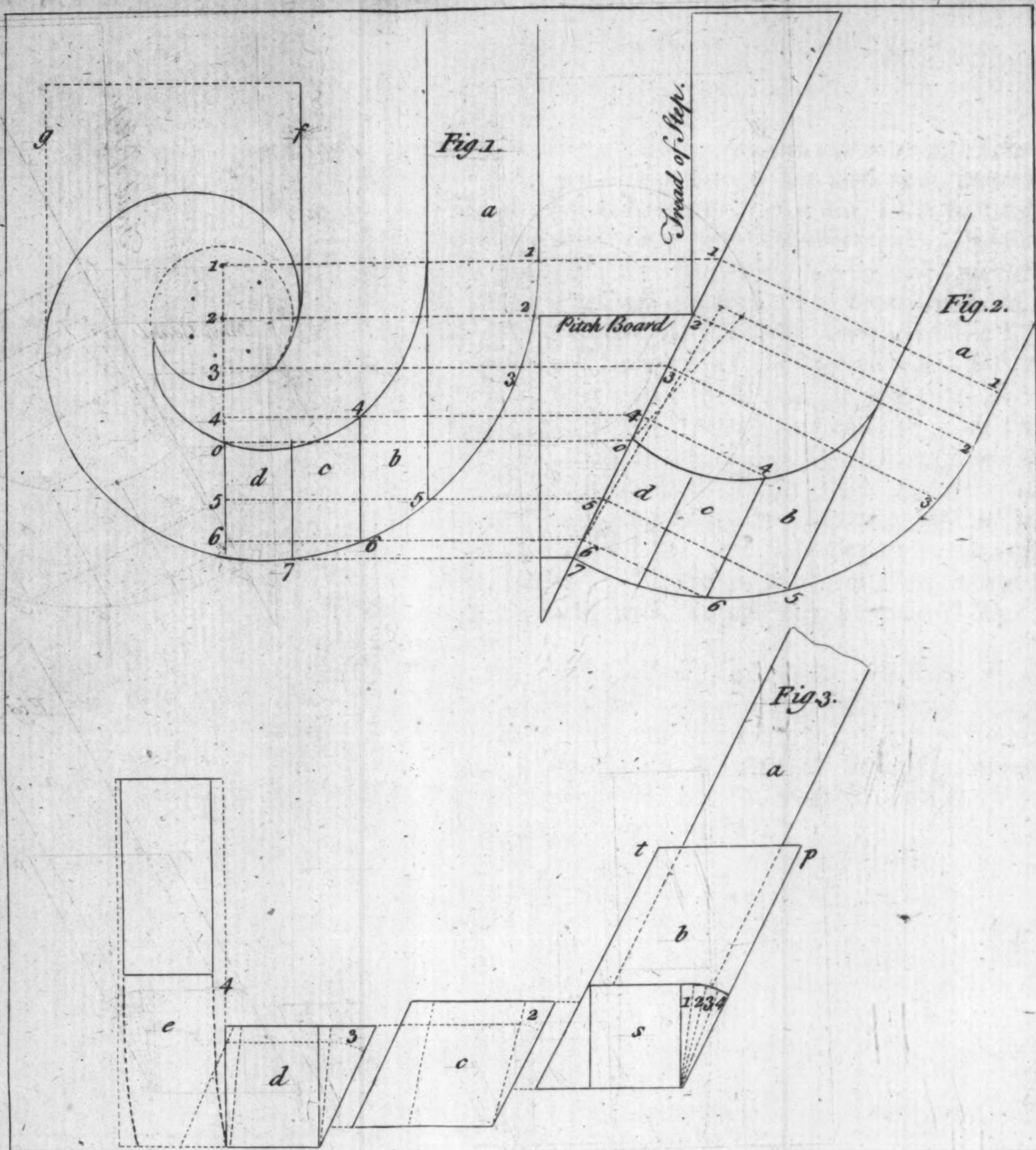


The Section of Stairs, geometrically demonstrated, for the practical Use of Workmen, Fig. A. represents the Section of two Flights of Stairs which are drawn by the Scale below, of 1 Inch to a Foot, by which all the Parts may be exactly measured; and according to this Rule may any Staircase be laid down, when the Measure of the Place is taken where it is to stand, which Measures are to be taken according to the following Directions: *ab* represents a Rod, the Height of the Floor where the Stairs land, which Rod must be divided into as many equal Parts as it will require Risers to get up to the intended Place, which, in this Case, is thirteen, each Part being 6 Inches.

Take the Length *cd*, on the Floor, and divide it for the Tread of the Steps, which is $11\frac{1}{4}$ Inches each; then set the Nosing 1 Inch forward, the Step will be $12\frac{1}{4}$ Inches. In the same Manner is the upper Flight divided, which is plain, by the Lines dropped to the Line *l*, level with the first Landing. The next Thing is, to find the Height of the Hand-rails and Newels, with their Ramps and Knees; to erect which, draw a Line to touch the Nose of the Steps, as in the Section; then draw two other Lines at Right-angles with that, as *k l m n*, then set on 2 Feet, 1 Inch on each Line, as figured, which gives the Height to the Top of the Hand-rail; then set on the Depth of the Hand-rail, as *n o l p*, and draw the Line to meet the Side of the Newel at *e*, and to meet the Side of the first Newel at *v*; next divide the Step for the Banisters, and find the Place of the Banister

fter on the first Step, and draw the central Line q ; to meet the Under-side of the Rail at t ; from the Point of that Meeting, draw the Line r , or the under Part of the Knee; then setting the Depth of the Rail, as $r s$, and drawing the Line s to meet the Raking Part of the Rail at t ; draw the Line t ; it will give the Mitre of the Knee, and the Line r gives the Heighth of the Newel. To find the Center for drawing the Ramp, set one Foot of the Compasses at the Angle e ; extend the other Foot at f , and draw the Arch-line fg : where that Arch cuts the upper Part of the Rail, as at h , there is the Place to hold the Square, which will cut the level Line at i , the Center for drawing the Ramp. The Heighth of the Newels are all equal, as figured, which may be proved by the Scale.

By this Method, when the Measure of the Place is taken, any Stair-case may be drawn by this Scale, of 1 Inch to a Foot, by which will be found the Length of Strings, Newels, Banister and Hand-Rails, near enough for Practice in any Case required.

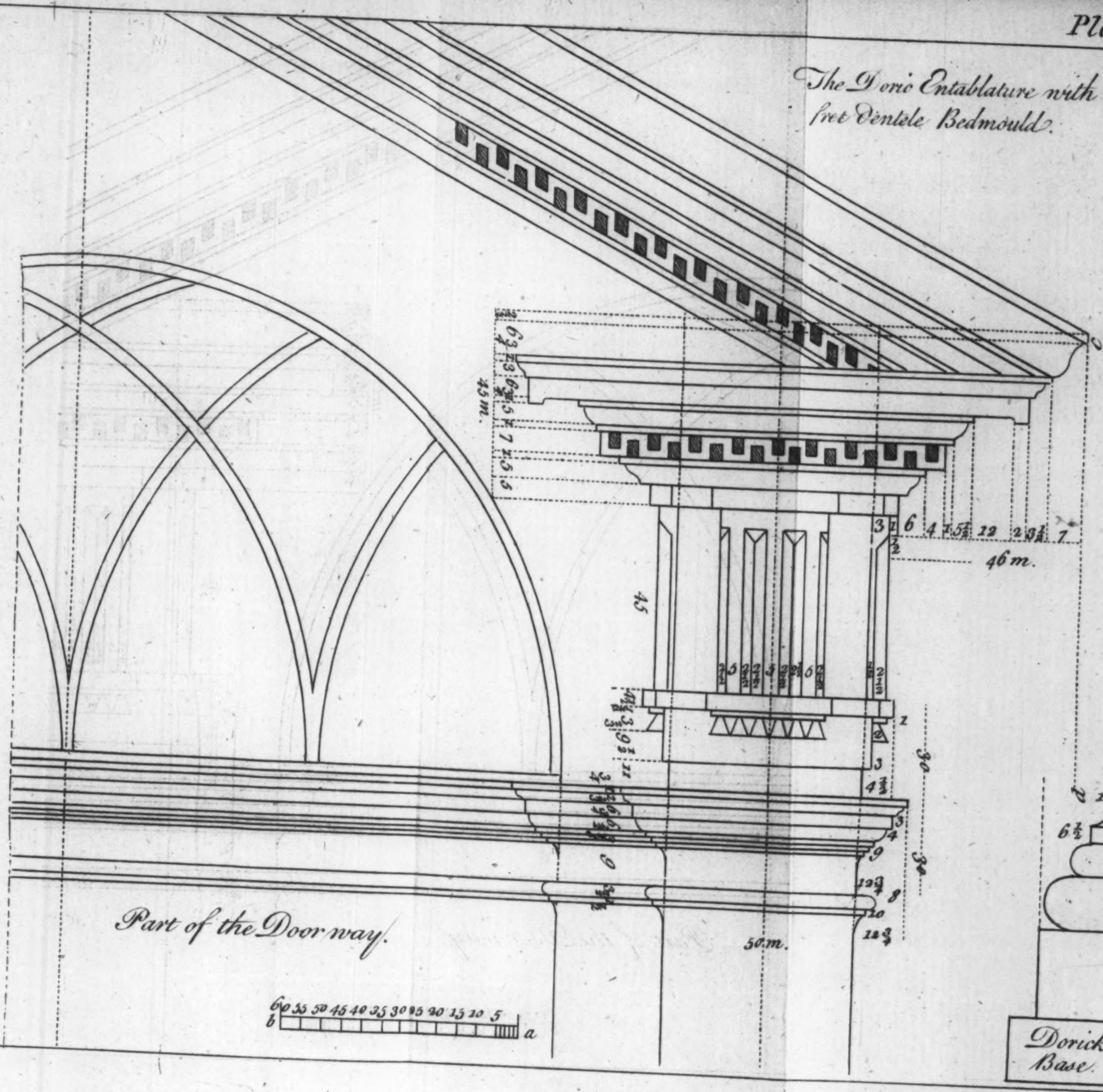


To make the Raking-mould for the Curve, or Turn of the twisted Part of the Hand-rail, as Fig. 2. first draw the Plan of the Rail, as Fig. 1. and thereon represent the Pieces which are to make the Scrole, or twisted Part of the Rail, as *b c d e*. This will be the parallel Piece which makes the remaining Part of the Scrole, and *a* is part of the Streight-Rail which makes part of the Twist. Lay down the Pitch-board, or Tread of the Step, parallel with the Plan of the Rail, Fig. 1. and the broad End of the Pitch-board 2 2, to range with the Line 2 in the Center of the Eye: thus will the Plan of the Rail and the Pitch-board be in a right Position with each other. Next, from the End of each Piece on the Inside of the Rail, as 1, 4, 0, draw the Lines to the Raking-line of the Pitch-board, as 1, 4, 0; also the Ends of the Pieces on the Outside of the Rail, as 5, 6, 7; then the Lines 2 2, 3 3, will equally divide the Square between 1 and 4, and are to be drawn to the Raking-line of the Pitch-board. Let the Lines 1 1, 2 2, 3 3, 4 4, 5 5, 6 6, be drawn square from the Raking-line of the Pitch-board.

In the next Place, from the Plan, Fig. 1. take the Distance 1 1 from the Central Line of the Eye to the Outside of the Rail, and set it from 1, on the Raking-line of the Pitch-board, to the Outside of Fig. 2. as at 1; then take 2 2 from the Plan, Fig. 1. and set it on 2 2 in Fig. 2. and 3 3 the same, and so on to *b b*. The Lines 0 0, and 7 7, give the Width of the Mould, from the Plan Fig. 1. to Fig. 2. on the Raking-line of the Pitch-board.
That

That Part of Fig. 3. which is mark'd *a*, is the Side of the Hand-rail; the Pieces mark'd *b c d*, are cut by the Pitch-board before glewed together; and that mark'd *e*, is the parallel Piece which makes the Eye of the Scrole, and lower Part of the Twist, the Width of which is equal to *fg*; and the Thickness *e*, from the Section of the Rail *s*, to the Top of the Piece, is divided into four Parts, and shews how much the Twist falls in the Thickness of each Piece, till it comes down to 4 in the parallel Piece *e*, so the Pieces may be cut nearly to the Size of the dotted Lines in the Section of each Piece.

The Doric Entablature with a
Fret Dentelle Bedmould.



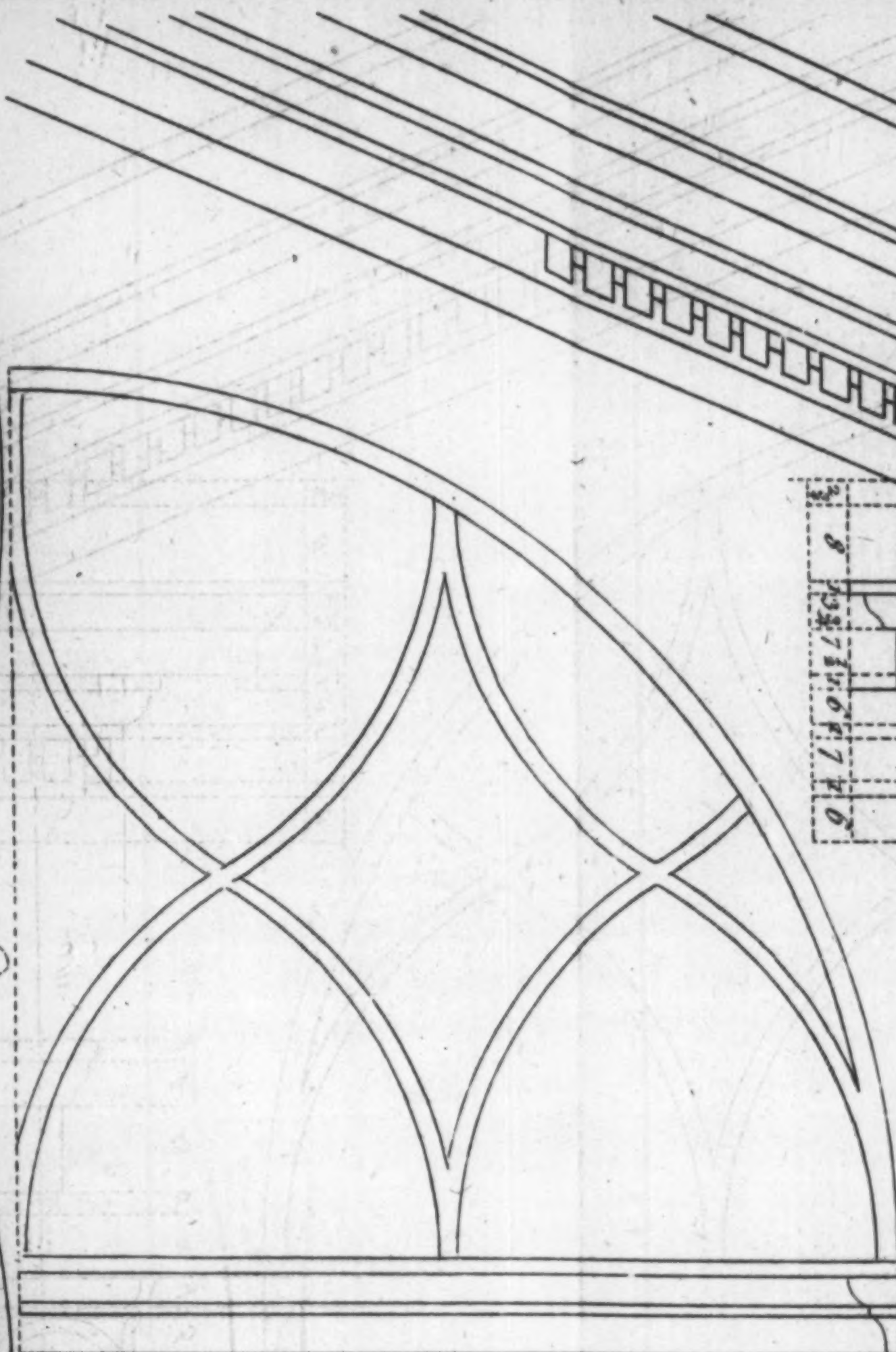


*The Ionic Entablature with a
plain Cut Dentelle Bedmould.*

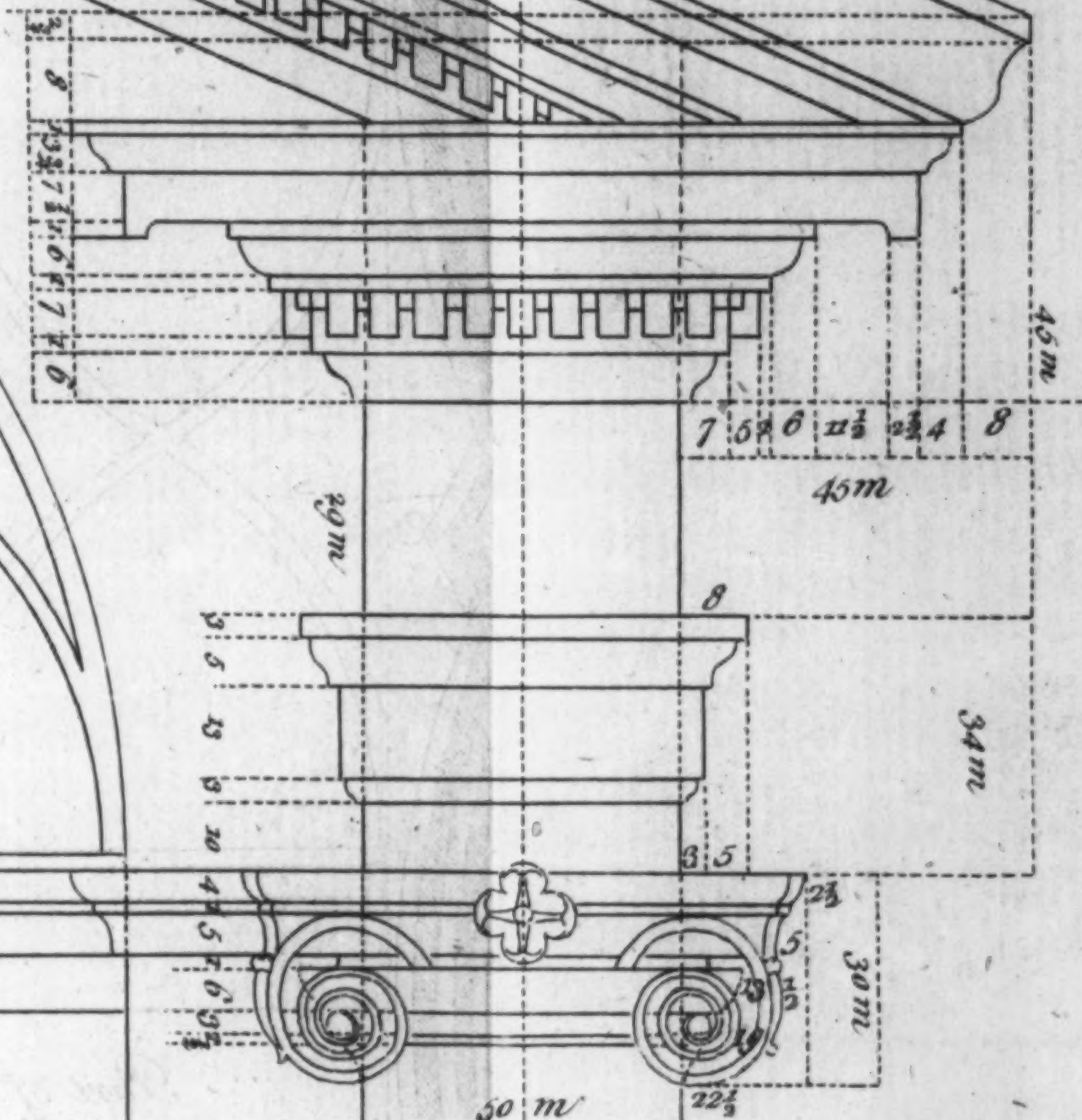
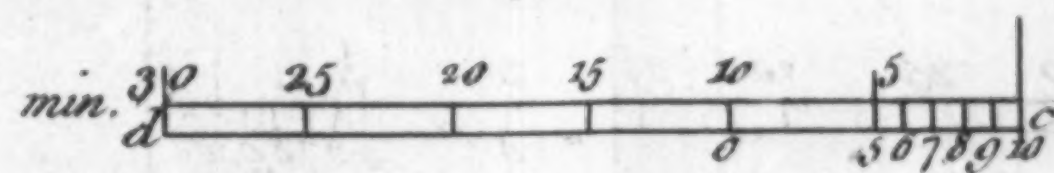
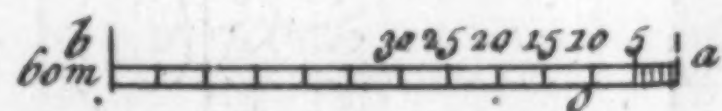
To lay on the Planes in the Pediment.



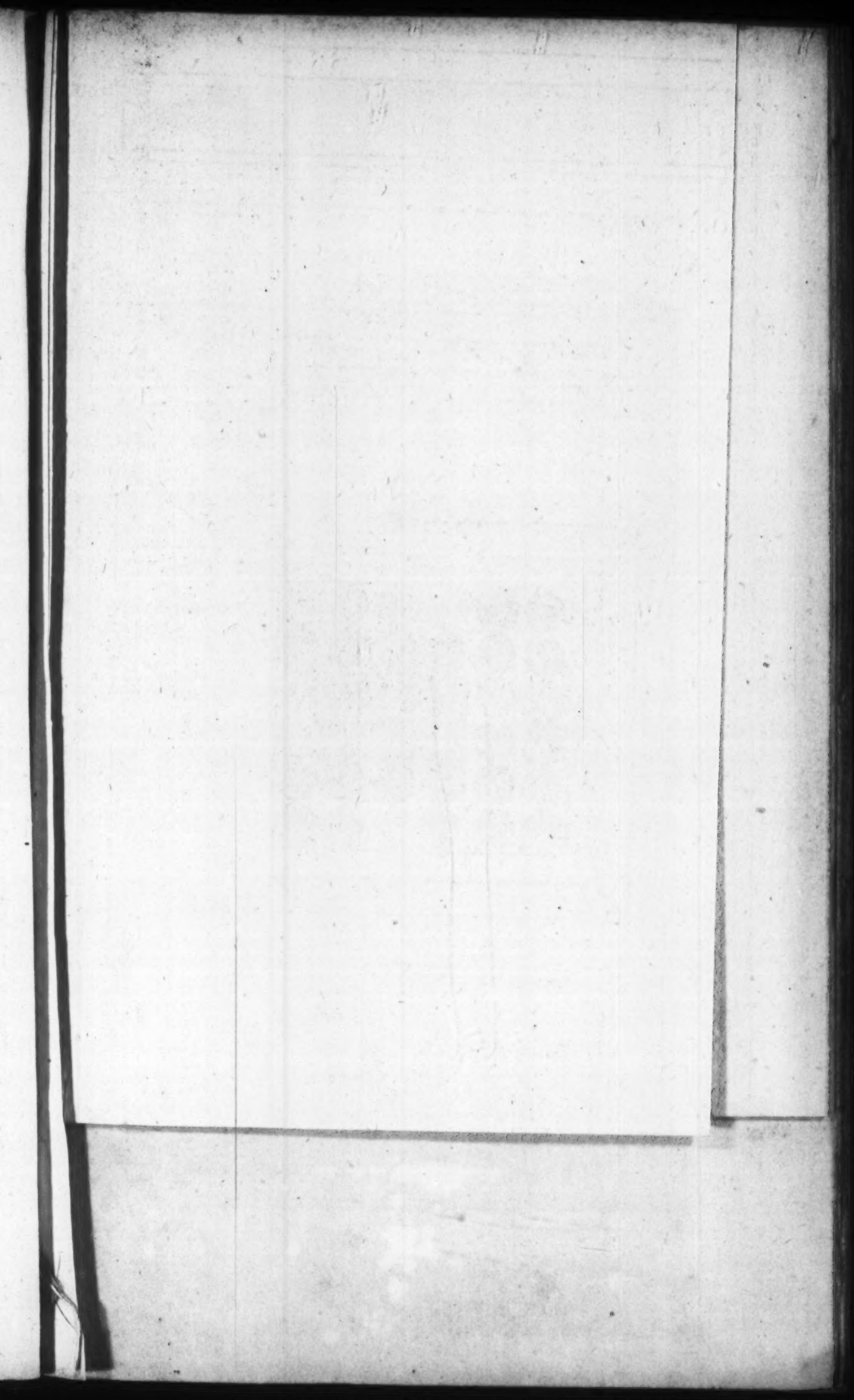
15 parts



Part of the Door way.







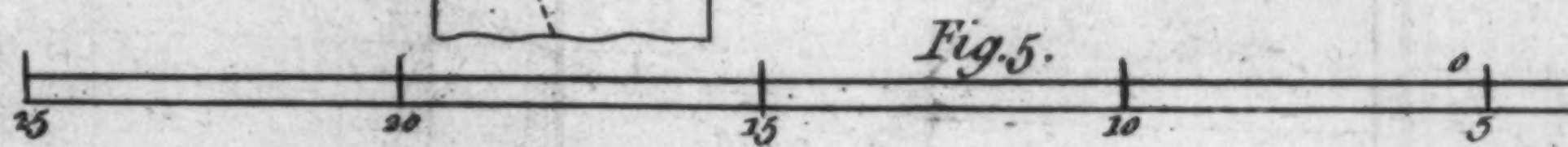
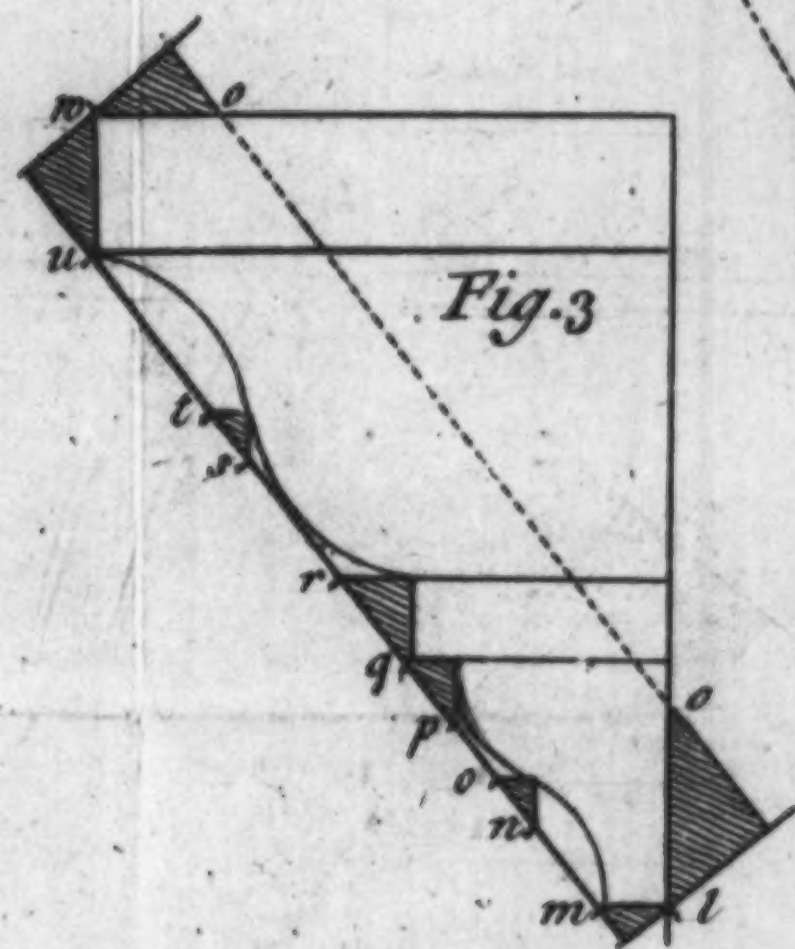
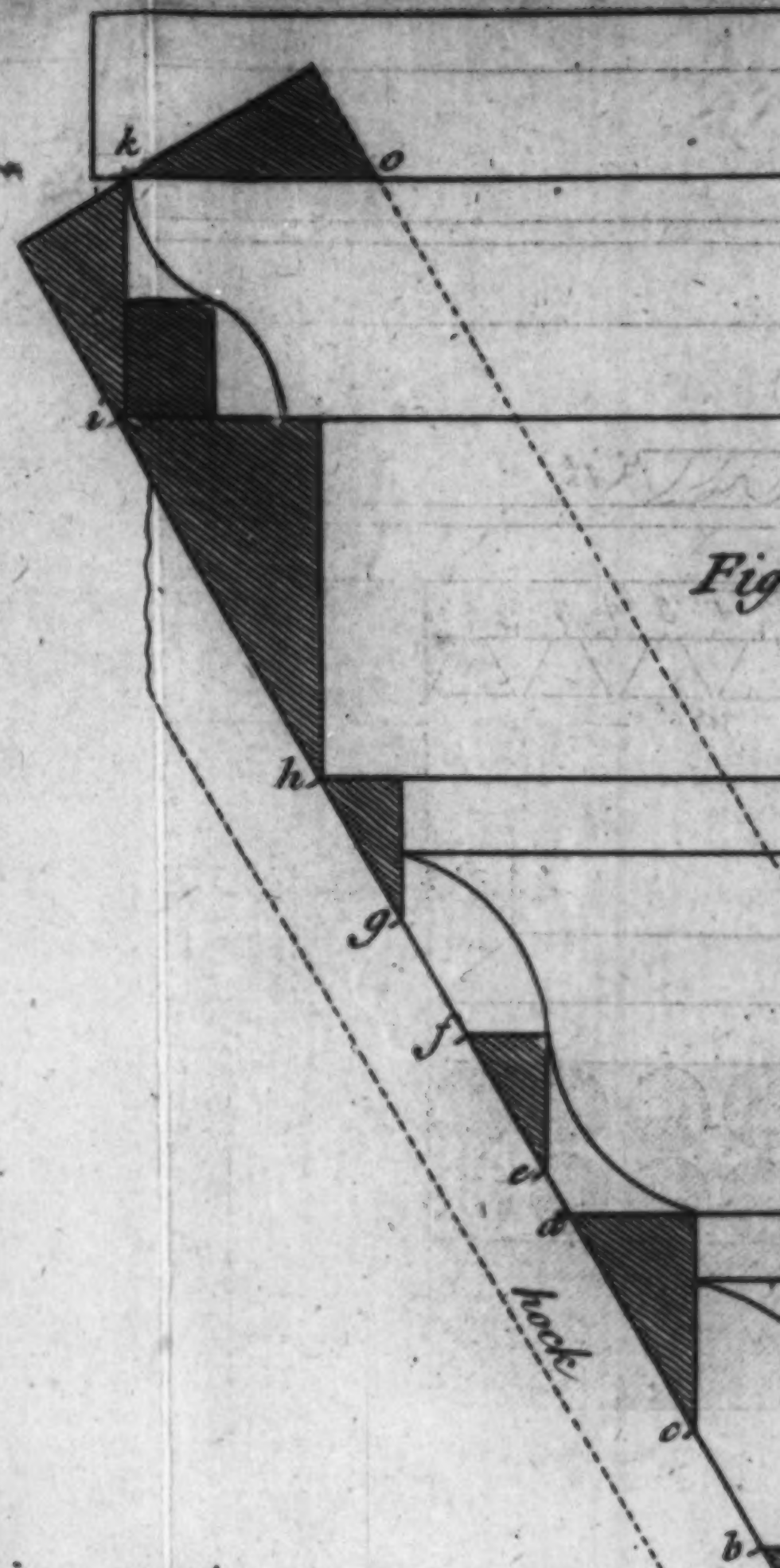
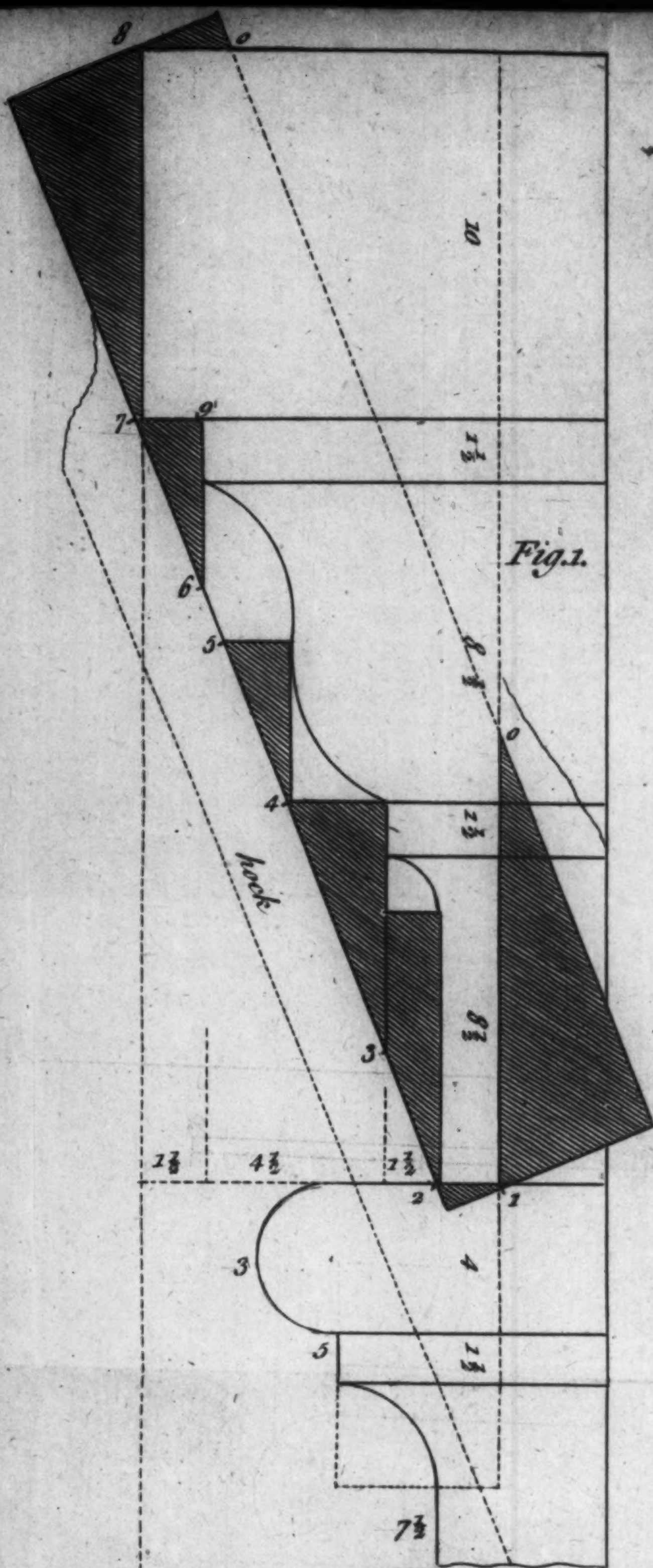


Fig. 2.

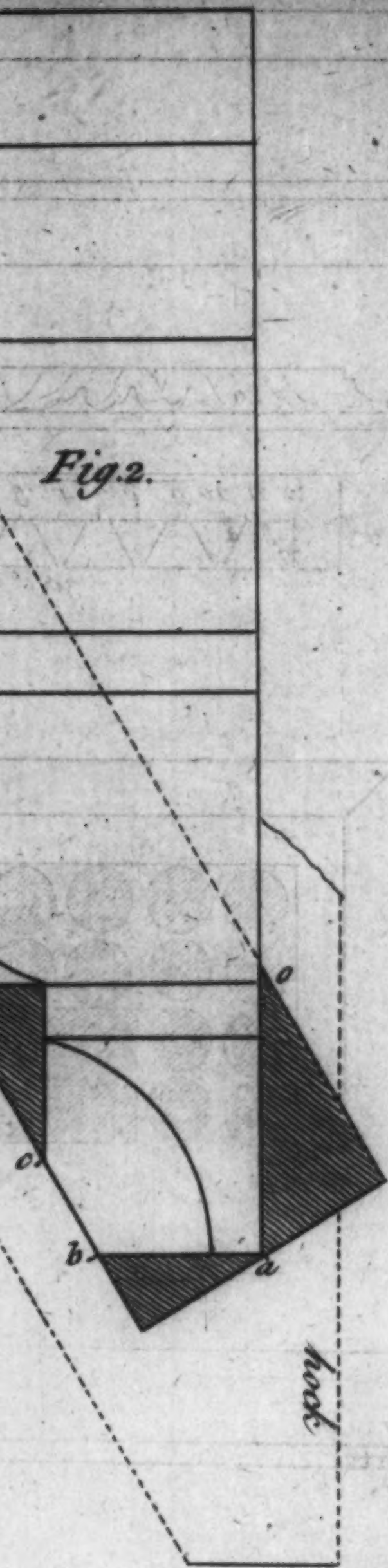
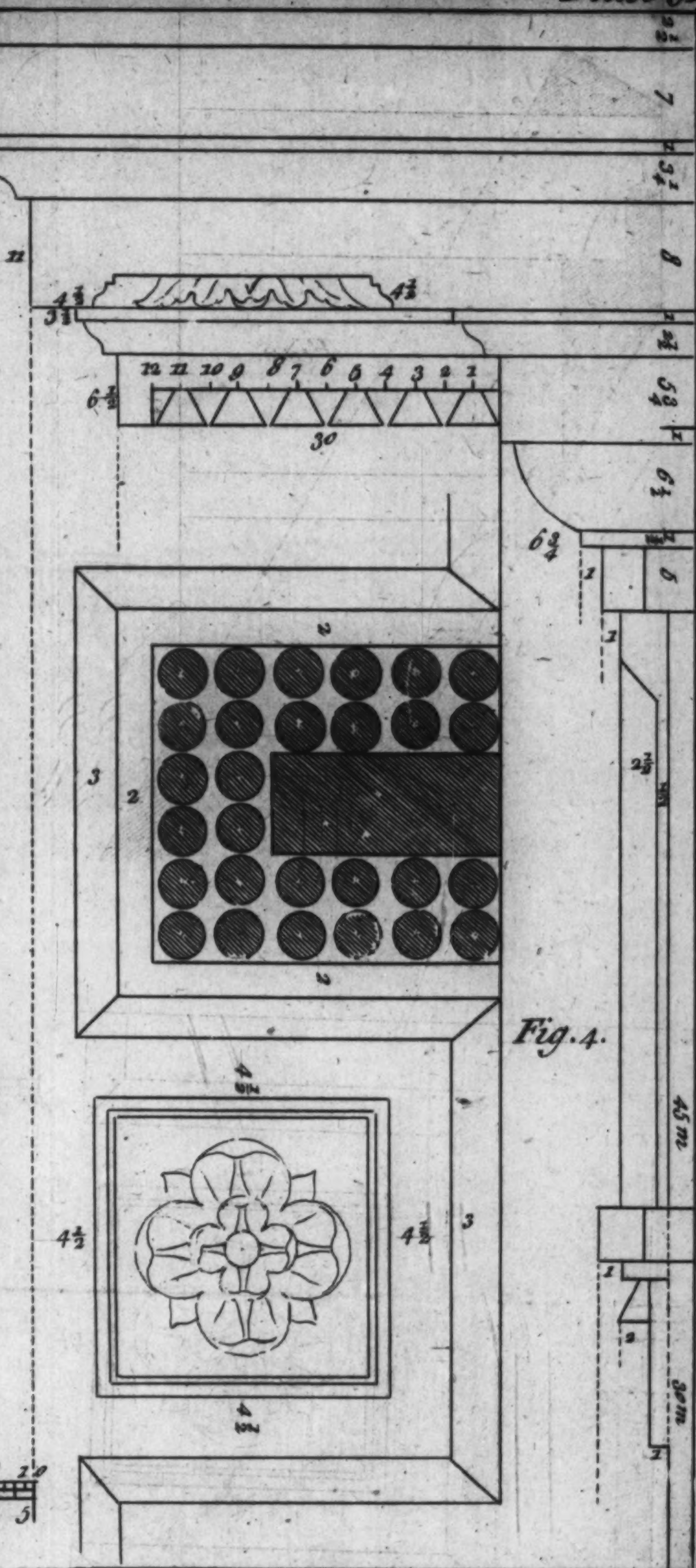


Fig. 4.



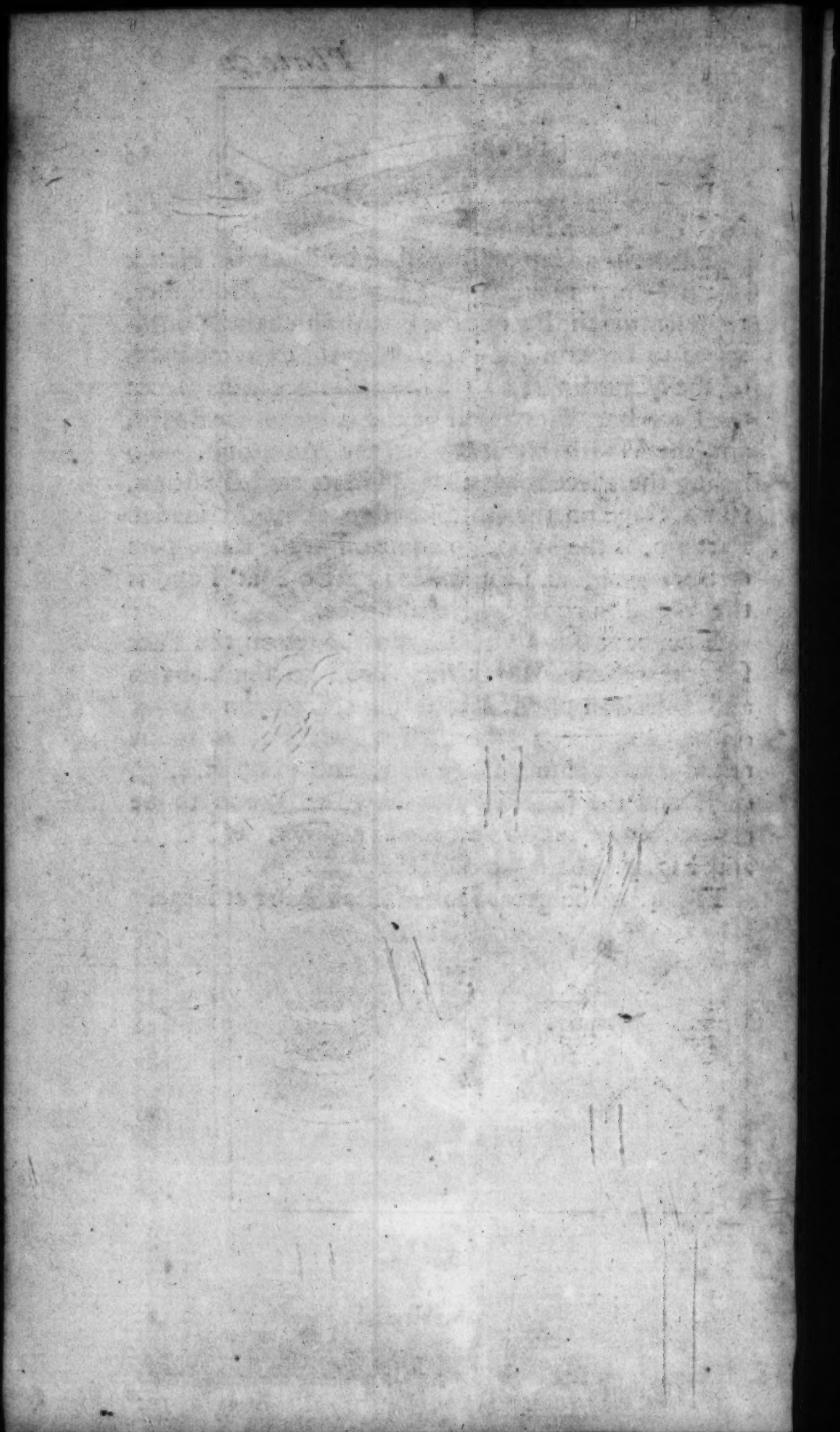
In Plate 51, is shewn the Method of sticking Mouldings by Hand.

Fig. 1. is a Cap or Impost to be stuck by Hand.

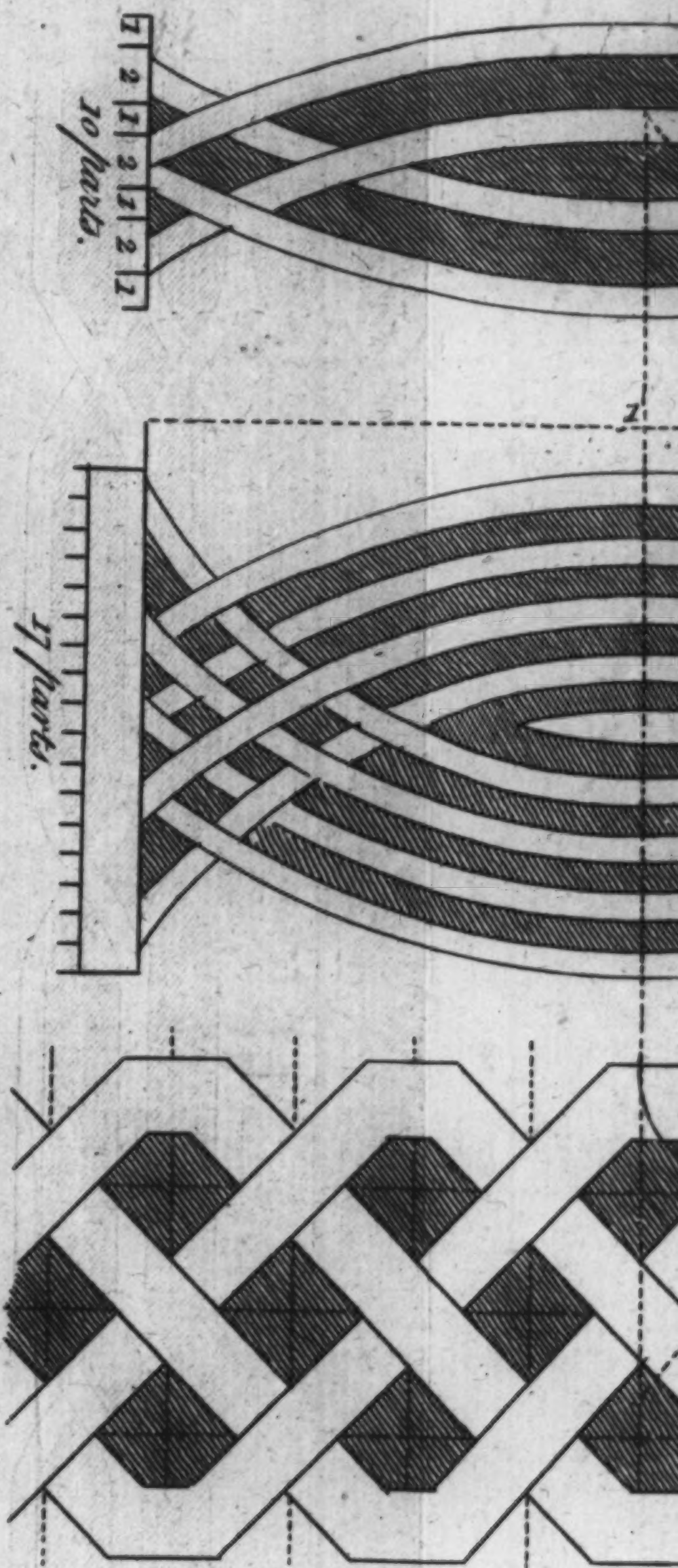
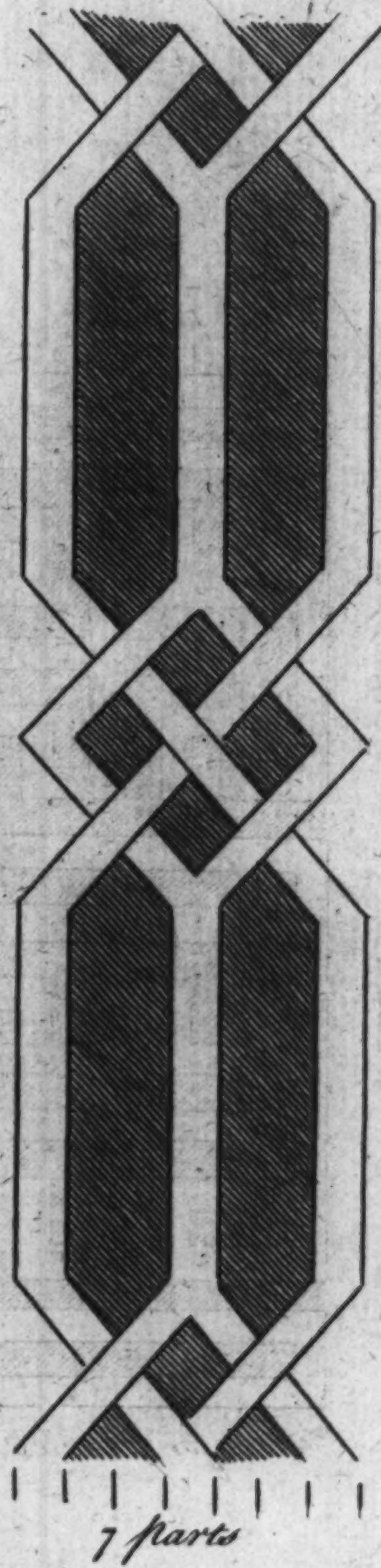
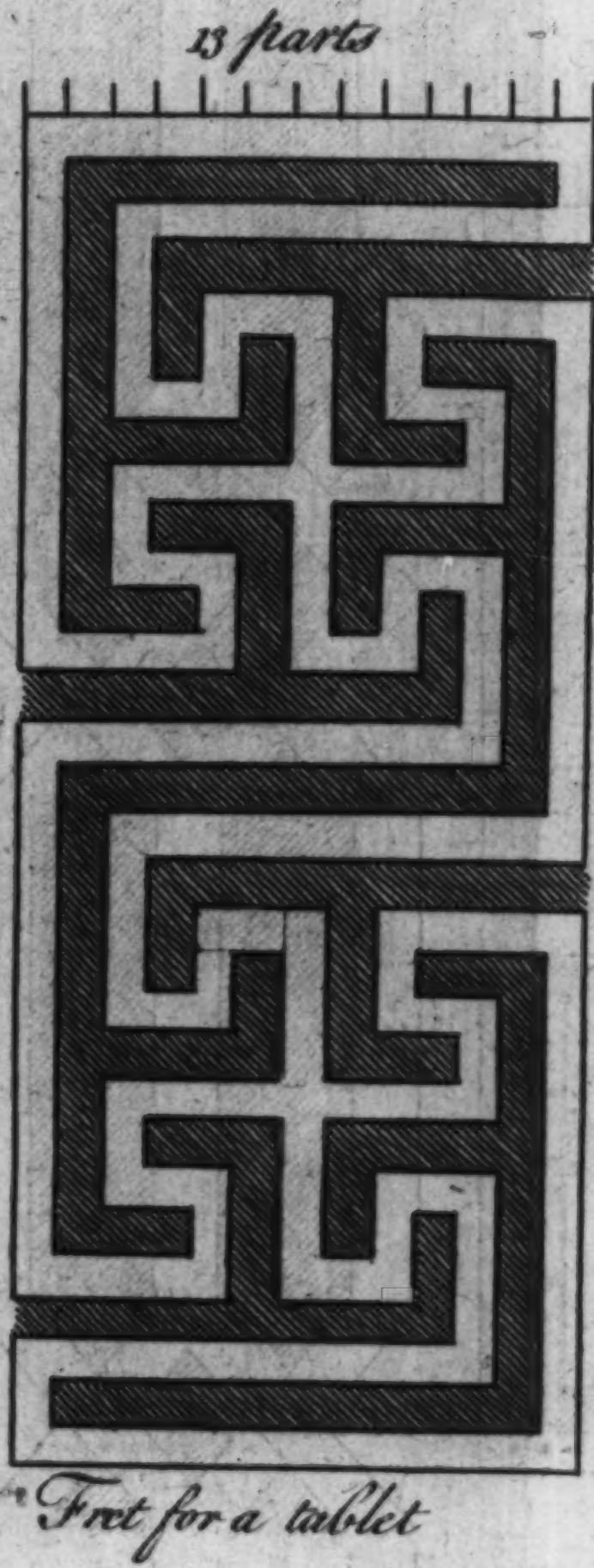
First draw a Line by the Face of the Moulding, representing the Face of the Board which the Moulding is to be wrought in; then in the extreme Parts of the Mouldings, as 1 8, draw Lines square from the Face-line, which will be the Edge of the Board, and the Width required for the Moulding. To spring the Piece for it to stand in its right Position, run a Gage on the Bottom-edge at 1, the shaded Part 1 0, is the Wood to come off at the Back-part or Springing, and the shaded Part 0 8 at Top, is the Wood to come off from thence.

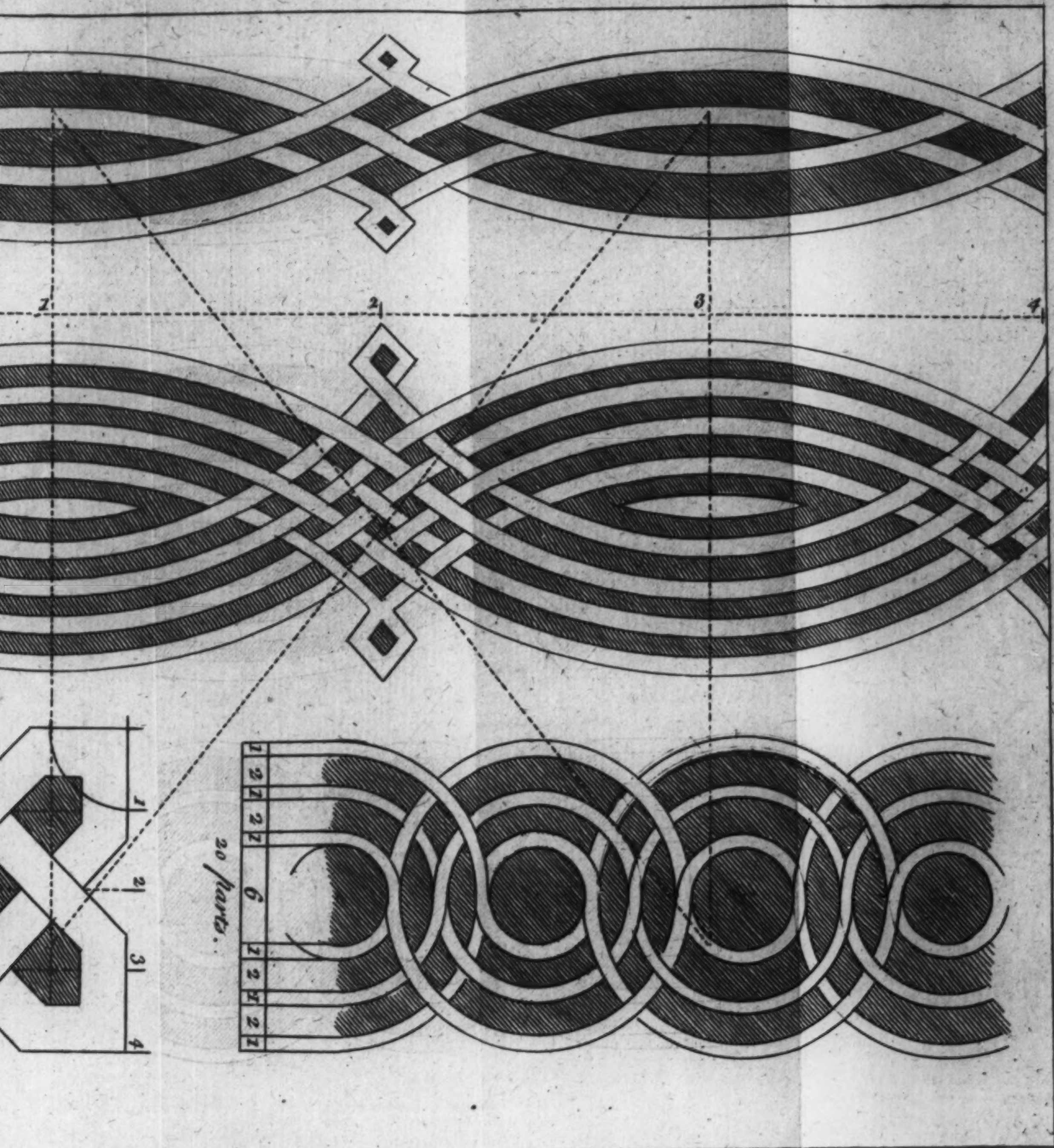
The next Thing is, to run Gages on the Face for the rebating away the Wood to the Squares and Bisection of the Mouldings; first run a Gage on the Face at 2, the shaded Part 1 2, is to be taken away; run a Gage at 3, and so on at 4, 5, 6, 7, and the shaded Parts shew the Wood to be rebated away, and so on for any other, as Fig. 2. and Fig. 3.

Fig. 4. is the great Doric Entablature at large.



Frets and Geriloches.







The new Method of finding the Diameter of Columns in Frontispieces in all the Orders, by dividing the clear Width of the Door into a certain Number of Parts, is more sure than the customary Method of dividing the Height,

Of the Tuscan Order, Fig. A. Plate 53.

Divide the Width into four Parts, and let one of these Parts, equal to $9\frac{1}{2}$ Inches, be the Diameter of the Column, which is to be divided into 60 Minutes, and disposed to the Mouldings, in Height and Projection, according to the Figures on the Plate. See the Mouldings at large, Plate 4.

Of the Doric Order, Fig. B. Plate 53.

Divide your Width into four Parts, as is above directed for the *Tuscan*, and one of them will be the Column's Diameter, equal to 10 Inches, which must be divided into 60 Minutes, and applied to the Mouldings as before. See Plate 5.

*To proportion Frontispieces in the Ionic Order, Fig.
C. Plate 54.*

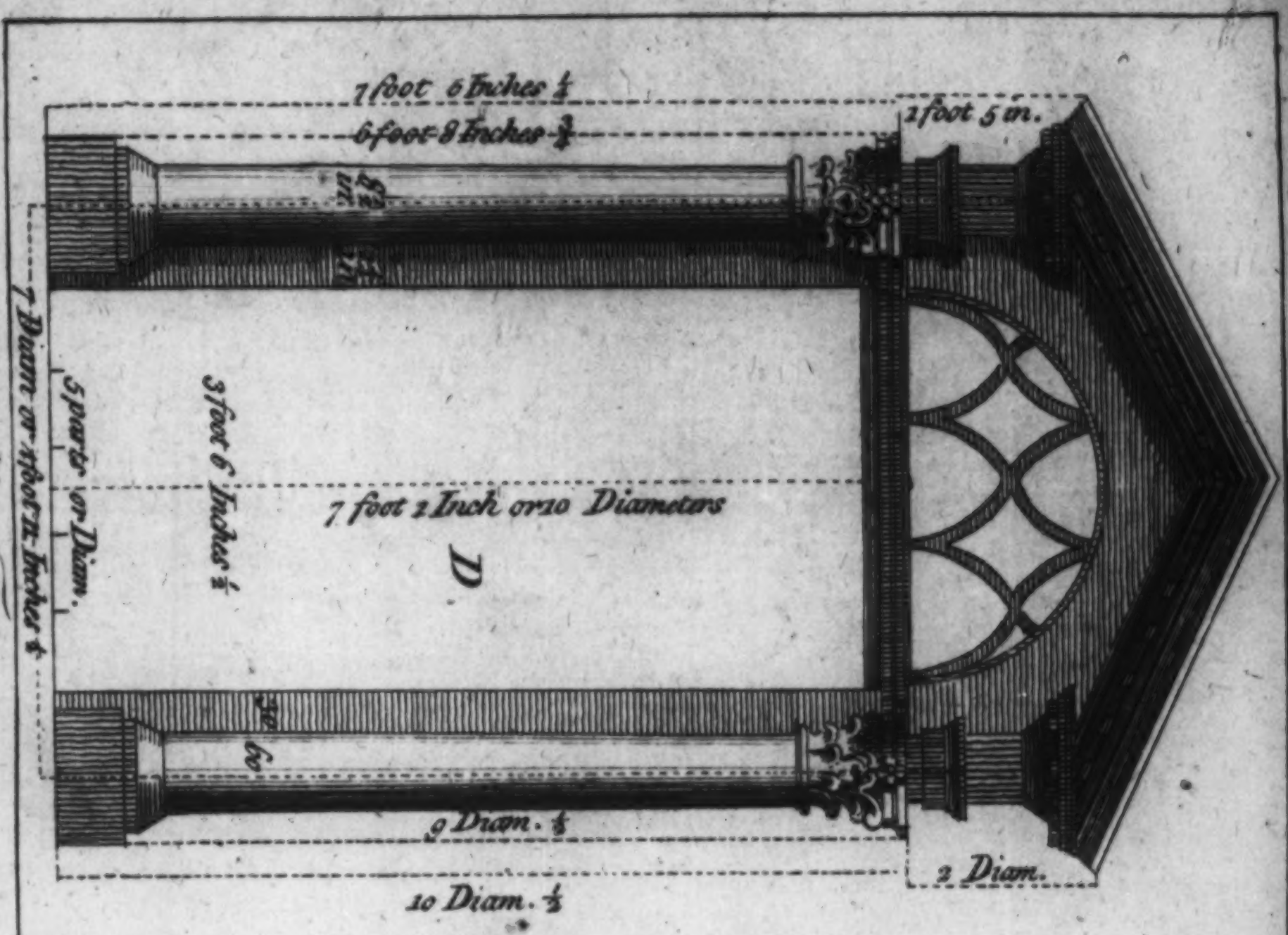
Divide your Width into 9 Parts, and let two of these, equal to $9\frac{1}{3}$ Inches, be the Column's Diameter, which dispose as before. See the Mouldings at large, Plate 7.

In the *Corinthian* Order, the Diameter of the Column is just one Fifth of the Opening, or $8\frac{1}{2}$ Inches, and must be managed in the same Manner with the other Orders. See Plate 7.

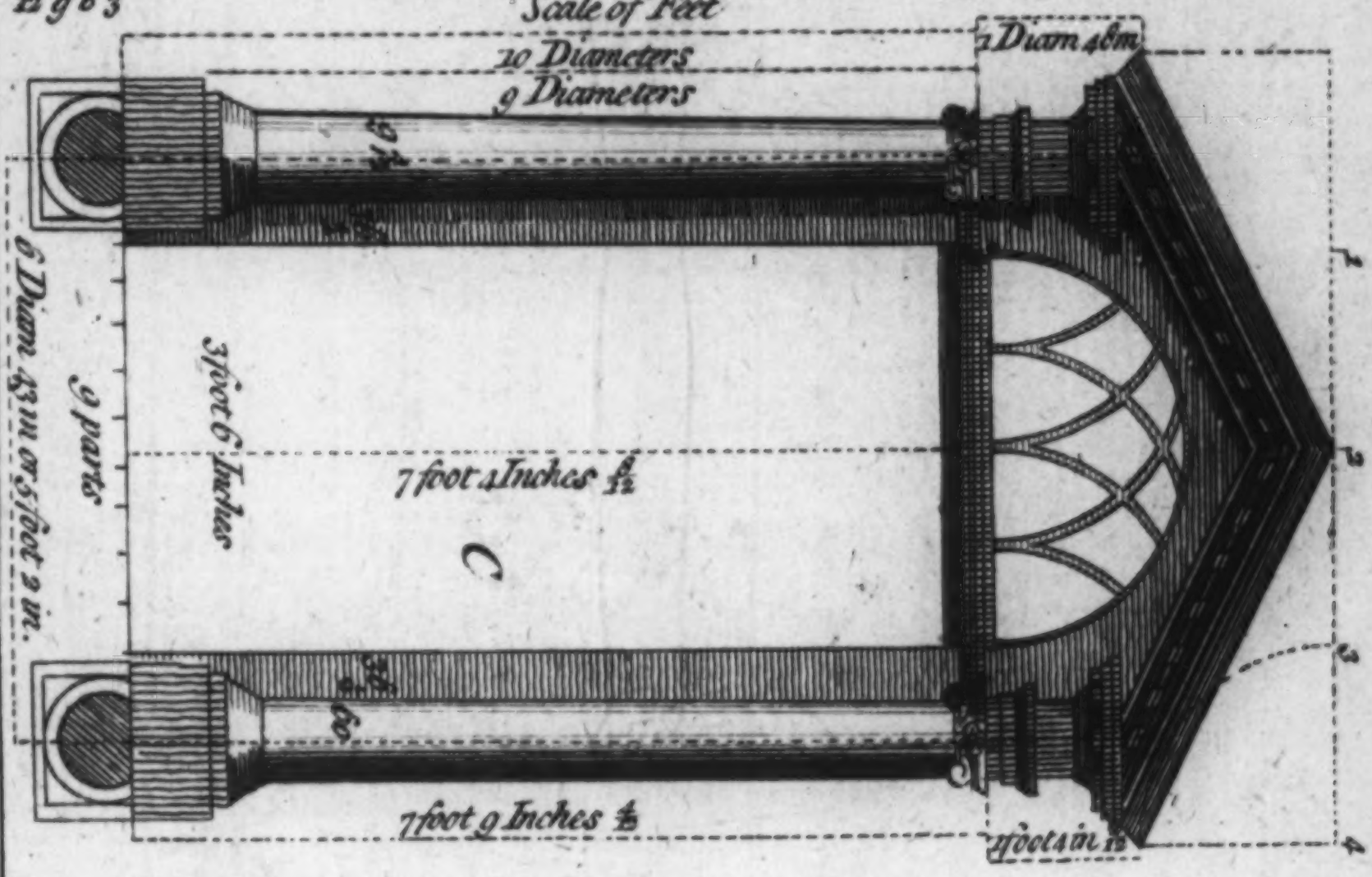
The Reader will observe, that in all the Orders, the Height of the Columns, with their Members, are measured by a Scale of Feet and Inches, as well as by the Column's Diameter, and that both Methods exactly agree.



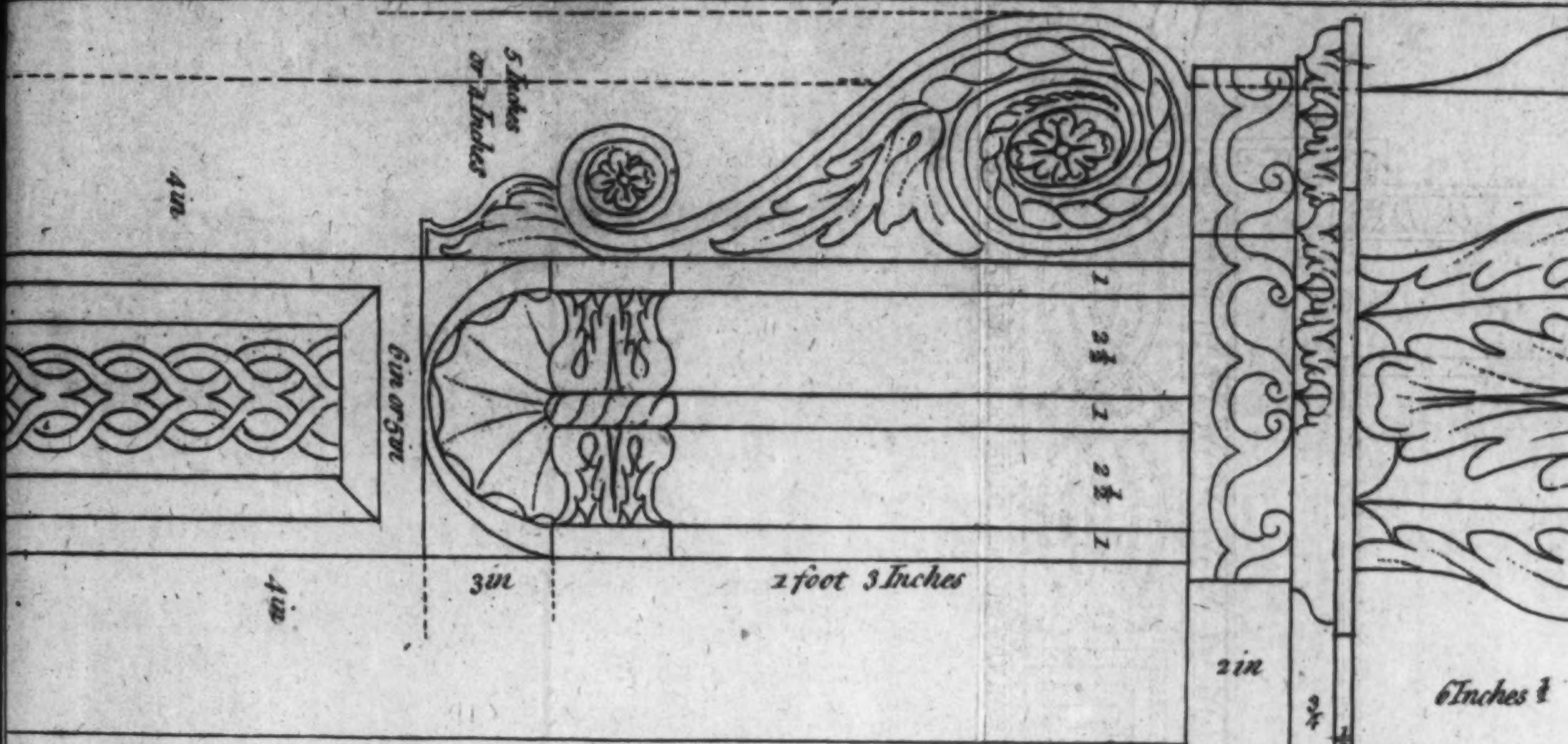
Corinthian Front.



Ionic Front.

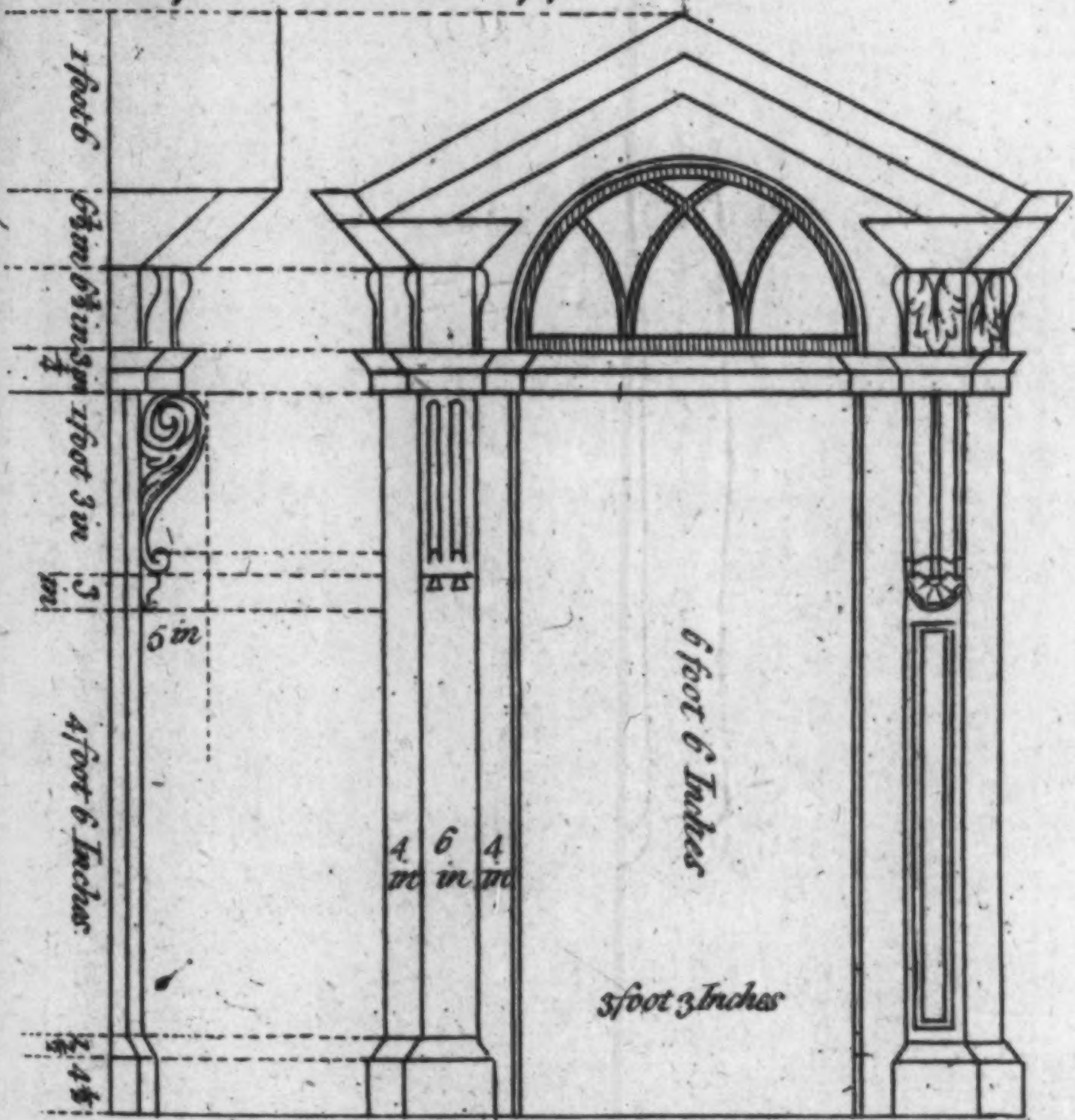
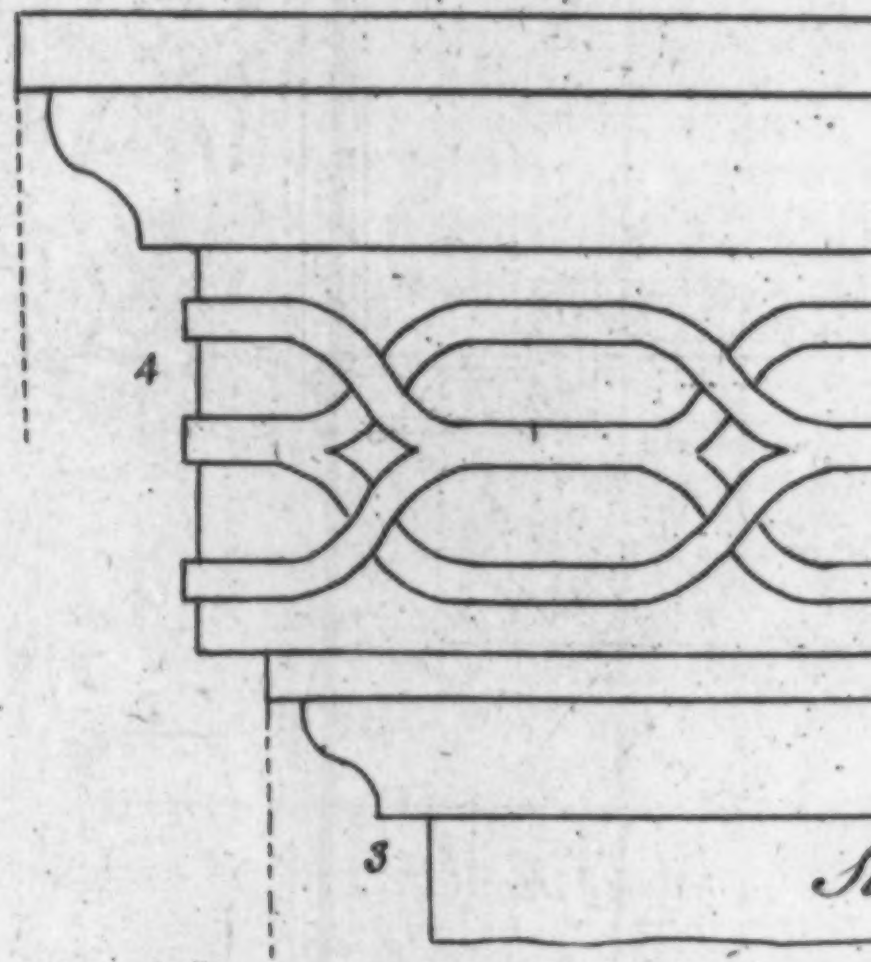




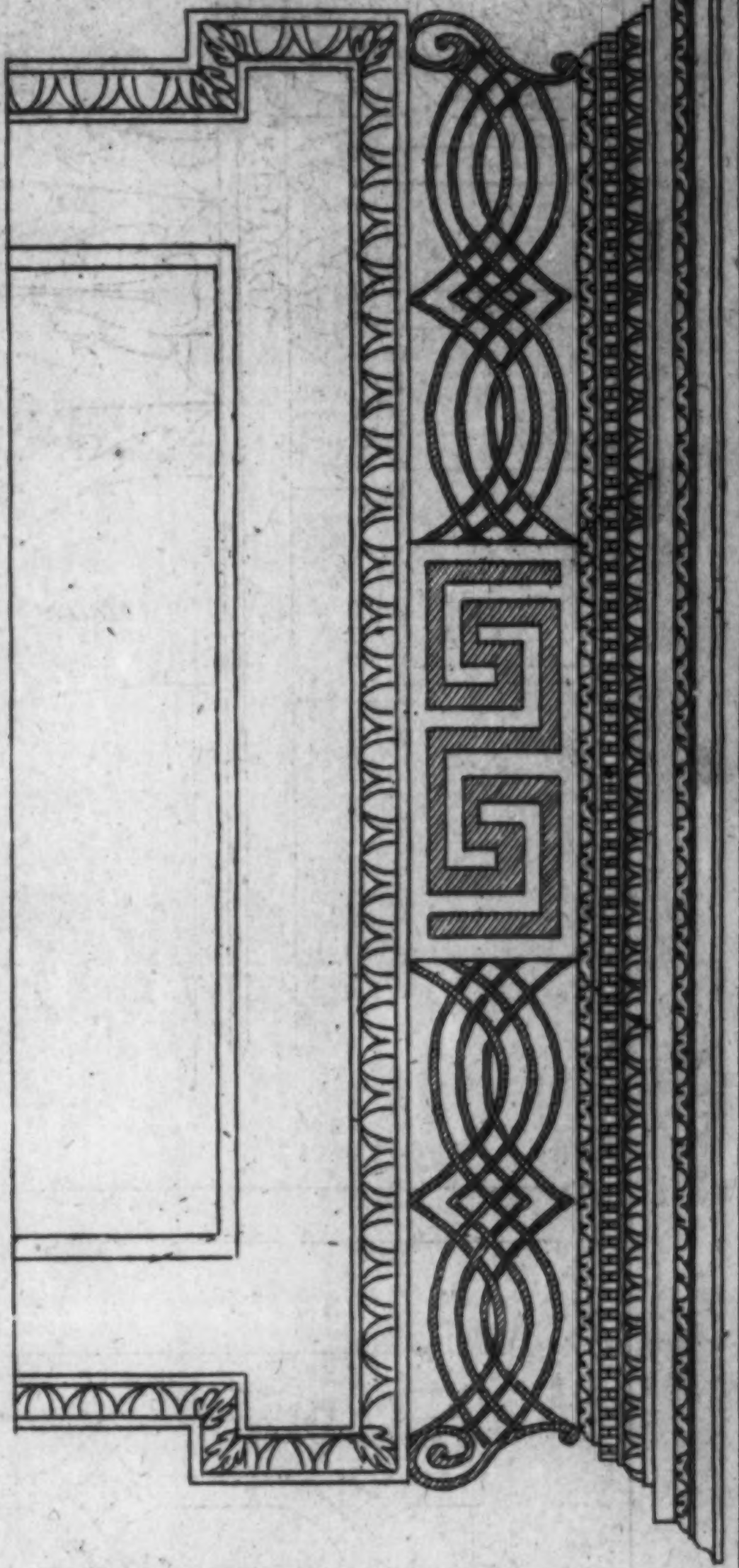


*Frontispiece with the Entablature at large
all the parts measured by feet & inches*

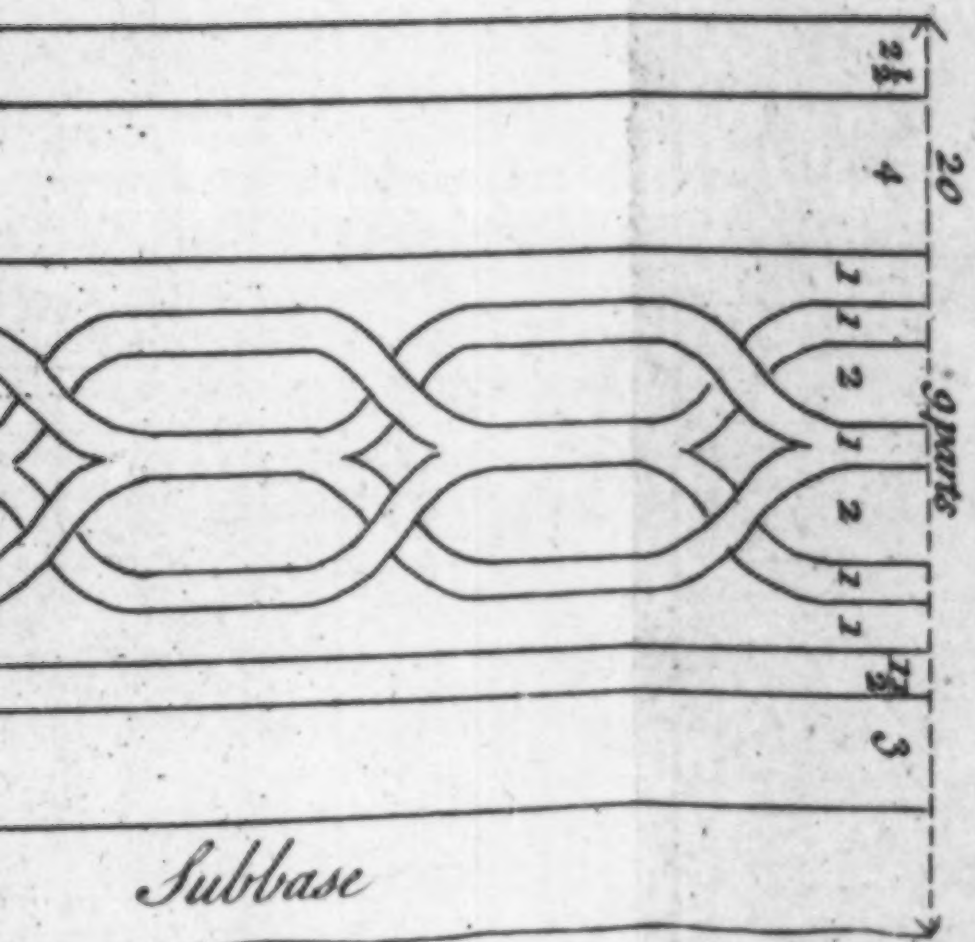
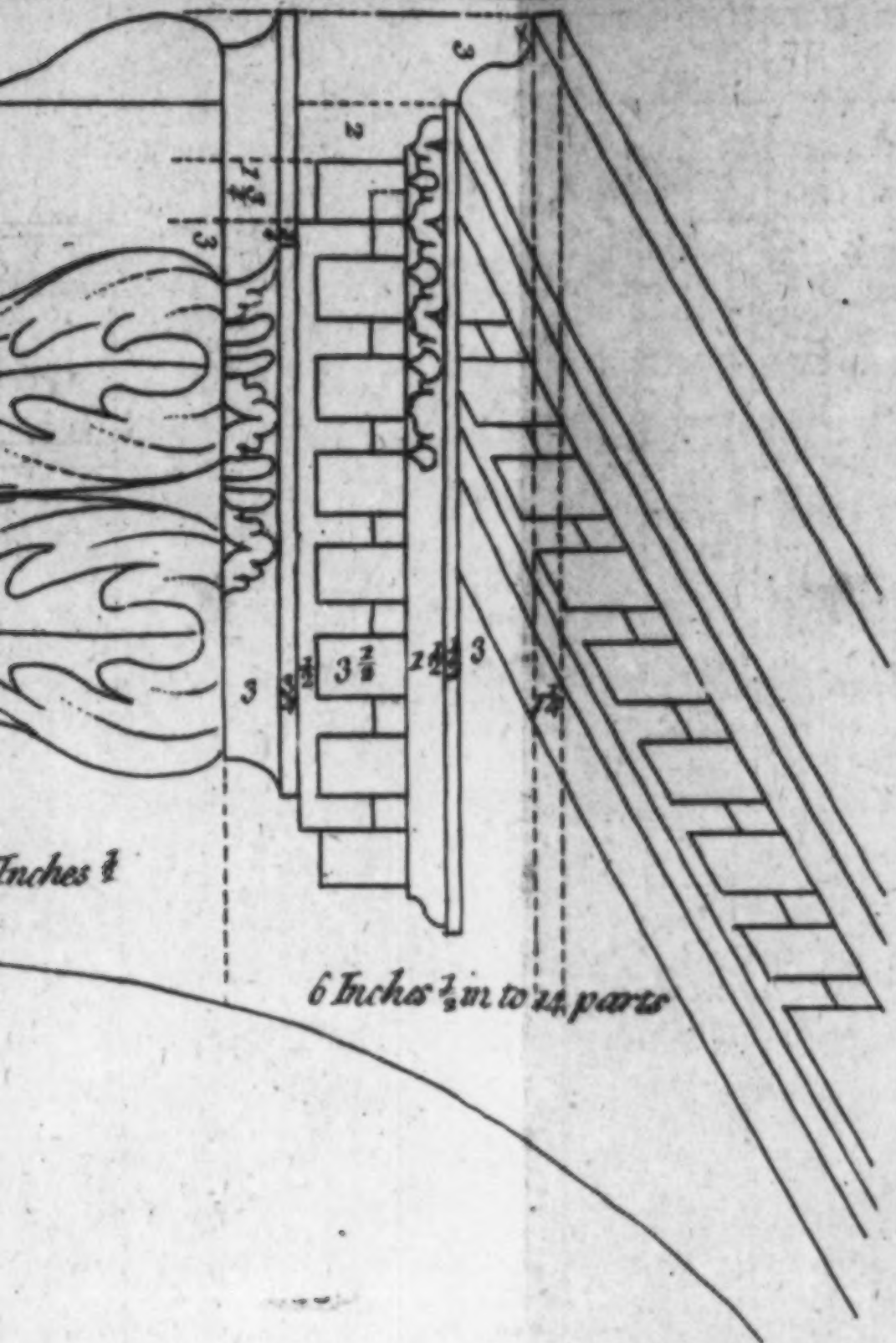
*Part of
Door-way.*



Ornamentation for Chimney Piece.



Plinth & Base. 7 parts to Door



Subbase

